
National E-Commerce Strategy

Before discussing national e-commerce strategies in detail, we would like to explain why we determined to write this chapter in such a rich and colorful manner and the motivation for our further research at the national level. It is this point which makes this book different from others of the same kind.

From the perspective of development, the competition between countries continues and is hotting up on a worldwide scale. In history, the competition has resulted in the rise of a super power as well as the disappearance of another. In the 21st century, the competitive advantage of a country depends not only on substantial power such as military force and economic strength, but also on soft power such as systems, strategy and culture. A balanced system, scientific strategy and appropriate culture will produce talents, advanced technology and a developed economy, which enhances national comprehensive strength to provide a country with solid power to maintain its appropriate international status. Thanks to correcting development strategies, some countries once with a weak industrial foundation and a large population have grown into world-class software bases. Owing to suitable development, East and Southeast Asia's economic miracles often happen in countries which are lacking in resources. Conversely, some countries' economic collapse may be due to too much emphasis on heavy industry and ignorance of the needs of light industry development. To analyze the financial crisis spreading around the world arising from economic imbalance, the problems lie in excessive development of finance, securities and real estate.

In a word, proper strategy and a balanced system can ensure long-term growth and a continuous competitive advantage, while an inadequate strategy may become a ponderous burden that results in the failure of a country due to fierce competition. No sooner had the concept of e-commerce appeared than developed countries responded immediately and formulated strategies that could cope. At the same time, both developing countries and regions were keenly aware of the essential role of e-commerce and put e-commerce on the agenda of state construction. Many of them highly expect e-commerce to boost their new domestic economy and realize economic recovery. As mentioned above, the prospects of a nation are closely related to the orientation of its e-commerce. The development of e-commerce can directly influence the economic construction

level and determine the fate of a country to a large extent. Therefore it is entrusted with historical significance.

From the standpoint of an academic study of strategies, researchers should have a vision broad enough to analyze e-commerce strategies on three levels: national level, sector of activity and type of enterprise. Even researchers working for enterprises are advised to grasp the overall situation at the corporate level. Especially when e-commerce strategic thinkers choose a strategy for a transnational enterprise, they should fully consider the attitude of the local government to e-commerce, the development policy, related laws and regulations etc. to ensure the feasibility of the strategy. As a result, it is inevitable that they must sharpen the understanding of national e-commerce strategy before formulating the final strategy.

In this chapter, national e-commerce strategy is introduced and analyzed to help readers finish the strategy formulation. Before writing this book, we did not find similar studies. If they exist, *E-Commerce Strategy* can be used for a comparative study or reference; otherwise, we sincerely hope it will bring attention to national e-commerce strategy and arouse the readers' research interest.

2.1 The United States

The United States is a superpower in economic, military, scientific and technological respects, in culture, education and so on. In addition, the United States is the birthplace of the information industry and e-commerce and is also an information giant. The United States formulated its relevant strategy as soon as e-commerce appeared; being the first to take advantage of e-commerce, and it has obtained an absolute advantage in developing e-commerce. Therefore, we will first introduce the e-commerce strategy of the U.S.

2.1.1 Economic Conditions

The United States of America is a federal constitutional republic comprising fifty states and a federal district ^[1]. The United States is the most powerful country in the world. The overall strength of the United States can be gained by analyzing all aspects of the economy, technology, military power, education, trade, resources and so on, with statistical data such as DDP, population, international trade volume, military expenditure, R&D expenditure, the number of top world universities, the number of Nobel Prize winners. These indices are listed in Table 2.1. From the historical point of view and its comprehensive national strength, the United States is in a unique position in the world.

Table 2.1 The overall strength of the United States

Item	Amount	Rank	Note
Land area	9,360,000 km ²	3	
Population	308 million	3	
GDP	\$14,657 billion	1	GDP per capita ranked 9th
International trade volume	\$2,608.124 billion	1	The trade volume of goods was \$400.904 billion more than China and \$557.35 billion more than Germany
Military expenditure	\$661 billion	1	It accounts for more than 50% of global military expenditure
Military capacity		1	Armed with the full advantages of land, sea, air and nuclear power
Political power	One of the five standing members of the United Nations Security Council		The United Nations headquarters is in the United States
R&D expenditure	\$5.618 billion	1	It's the US budget for scientific research in 2010
Number of Nobel Prize winners	314	1	It accounts for more than 70% of the total number of Nobel Prize winners
Number of top 10 world-class universities	8	1	80%

The United States is rich in natural resources, whether in land or in mineral resources, which provides a solid material foundation for the U.S. economy. Meanwhile the United States is the world's largest agricultural producing country owing to its subtropical climate and vast land. According to the data published by the IMF in 2010, the U.S. GDP was \$14,657 billion, ranking first in the world. Its GDP per capita was \$47,284. The nation successfully retained its position as the world's largest international trading nation in 2009. Its total foreign trade volume of goods was \$400.9 billion more than China and \$557.4 billion more than Germany. In addition, the United States was still the third largest exporter around the world with total exports \$156.1 billion lower than China and \$74.7 billion lower than Germany. The United States was also the world's largest importer, \$557 billion higher than China and \$632.1 billion higher than Germany.

U.S. businesses are very well developed. There are some American companies in every industry in the top 50 of the Fortune 500. In the petrochemical industry, there were Exxon Mobil, Chevron and Tang Fei, respectively ranked the second, fifth and seventh amongst the Fortune 500 in 2009. In the retail industry, the United States has the world's largest retail company Wal-Mart, whose revenues reached \$405.6 billion in 2009. In the auto industry, General Motors and Ford are both world-wide renowned brands. The U.S. financial industry is also well developed. Bank of America, Citibank, Berkshire Hathaway and JP Morgan Chase

are world-renowned financial firms with revenues of \$113.1 billion, \$112.4 billion, \$107.8 billion and \$101.5 billion respectively. There are also HP and IBM, whose revenue respectively reached \$118.4 billion and \$103.6 billion in the information industry. The United States almost leads the information industry in the world, especially those key electronic information products closely related to the development of e-commerce. There are not only IBM, Intel Corporation, AMD, HP, Cisco System, 3COM, Dell Computer, Lucent Technologies, Apple Computer Inc., AT&T and so on in hardware, but also Microsoft Corporation, Oracle Corporation, Sun Microsystems, America Online, Google, Yahoo, Amazon and other online bookstores in computer software and network services.

The U.S. is the world's top scientific and technological power. The U.S. science and technology system is characterized by pluralism and diversity. National research and development is primarily carried out by the federal government laboratories, private companies, universities and other non-profit making research organizations. Among them, the number of scientific research institutions set up by the federal government is about 850. They mainly engage in applied research and technology development. The U.S. House of Representatives and the Senate approved the budget with a total amount of \$450 billion in 2010. Besides the National Institutes of Health and the National Science Foundation, the Government funded the National Oceanic and Atmospheric Administration and National Institute of Standards and Technology. The colleges and universities are the main base for fundamental research. And the research institutions of large enterprises are the backbone of applied research, accounting for three-quarters of the national research. The USA is the leader in many areas such as space science and technology, information science, environmental science and technology, biological engineering, materials science and technology, agriculture, manufacturing and so on. America is the most advanced country in the world in the field of information technology. Since the Clinton administration proposed the "information superhighway", the U.S. information technology and information industry achieved rapid development. The information industry has been the dominant industry in the national economy of the United States. IBM put forward the new idea of a "smart planet", the perception of achieving more thorough, more comprehensive, more intelligent in-depth technologies such as in electric power, in the supply chain and so on. The concept of a "smart planet" is highly valued by the Obama administration, almost as a national policy. The strategic objectives of informatization development in the U.S. are to lead the research and development and information technology applications and maintain the advantages of information technology. The United States, with its strong economic strength, massive investment in fundamental research and a good venture capital system, remains the leader of the information industry in the world.

2.1.2 Background to U.S. E-Commerce Strategy

U.S. e-commerce strategy is closely related to its competition with Japan and Europe in economics, science and technology after World War II.

During World War II, Japan and Germany respectively provoked war in the Pacific and in Europe against many other countries. Due to the huge consumption of human and material resources, European countries and Japan were almost all in ruins when World War II ended. Being far away from the battlefields, the United States had hardly been damaged. In contrast, the United States made money from the war and received a lot of talented persons, such as Einstein, from Europe. As a result, the United States became the world's largest economic and military power and established its supremacy in politics, economics, military power, science and technology after World War II. At that time, there was a big gap between the United States and Japan. Nobody had ever foreseen that Japan would catch up with the United States in the following years, but Japan's economy began to take off in the early 1950s. Since then, Japan had sustained rapid economic growth for more than thirty years. Japan's GNP per capita had caught up with that of the United States in the 1970s, and further surpassed that of the United States since then. The United States was at a disadvantage in some traditional industries, especially the automobile industry compared with Japan. During the 1980s, many experts were optimistic about Japan's economy, and held the opinion that the United States would decline from its peak, just like Britain, and be replaced by Japan. But all of them neglected the tremendous value of the American system and culture which was full of innovation and introspection.

In order to consolidate its position as "the world's largest economy", the United States began to adjust its strategy of economic development and implemented a grand informatization strategy in the 1980s. Its economic growth was driven by increasing investment in information technology, improving the information industry and promoting the upgrade of industries. The so-called "Star Wars" and "re-industrialization" development projects could best reflect the strategic direction of economic modernization. The "information superhighway" project presided over by Vice-President Al Gore was the specific action to promote the development of the information industry. Popularization of the Internet and advanced computer hardware and software research were the specific strategic objectives of the U.S. government. In order to support the information industry in developing rapidly and healthily, the United States increased the investment in research, paid a lot of attention to technology innovation, implemented asset reorganization and mergers, drew up the relative laws and took a series of supporting measures. The implementation of these strategic plans re-established the hegemony of the United States. During the 1990s, the Internet extended very quickly with the support of the United States Department of Defense and the National Science Foundation. The information technology and related industries had contributed more than a third to American's GDP growth.

In order to further promote the development of information technology and information industries, the United States launched a number of development plans

at the beginning of the 21st century, including the second generation of the Internet plan, the supercomputer of 1,000 trillion calculations per second, the development of future chips, access to the Internet at school and so on. The implementation of these plans greatly speeded up the development of the information industry of the United States, greatly increased network speed, memory speed and memory size of the chip and computer applications. Militarily, the United States set the goal of applying artificial intelligence to the military. Then, robots would fight on a battlefield instead of soldiers and computers would replace the co-pilot of a fighter. The plan of 20 G FLOPS (20 G Floating-Point Operations per Second) put forward by NASA was one of those plans. In television, the United States was the first to promote the advent of digital television. In 1991, the U.S. government determined to abandon the traditional analog TV technology and to develop the digital TV technology. In 1996, the government promulgated the technical standard for digital TV. In April 1997, the U.S. government gave up revenue of about \$70 billion to offer a free digital TV broadcasting license and determined to abandon analog broadcasting in 2006. In the development of mobile phones, the United States did not follow the idea of Europe, and decided to adopt CDMA which was more advanced than GSM as its mobile phone standard. CDMA not only made more efficient use of channels, but also had the potential to directly interact with multimedia and computers. Although, at the turn of the 21st century, the slowdown of the information economy hindered the development of information technology, it was still one important part of U.S. scientific and technological strategy. In 2000, the government invested \$850 million in information technology and telecoms and provided \$110 million to develop the second generation of the Internet, which established the material foundation for the development of e-commerce. In 2003, the Bush administration increased the expenditure on computers, software and technical services from \$49.8 billion in 2002 to \$58.1, up by 17%. Soon after President Obama took office in 2009, he signed the “American Recovery and Reinvestment Act of 2009”, which introduced a stimulus package with a total amount of \$787 billion. Obama thought America’s advantage in the Internet was being lost and the most advanced and modern information infrastructure needed to be developed as soon as possible, in order to support medical information, the smart grid, education, and broadband. An amount of \$7.2 billion was supposed to improve the broadband access network, particularly in remote areas. The specific measures included: developing the next-generation broadband network to meet the needs of business and communication in the 21st century; encouraging cooperation between public and private sectors to popularize the network applications especially at school, at home, in libraries or hospitals; encouraging the diversification of the media to weaken the monopoly and encourage innovation; providing more free and responsible information for children and providing effective tools for parents to protect their children from exposure to undesirable information.

As far as the development of e-commerce in the United States is concerned, we have to mention the giant “IBM”. IBM firstly launched the concept of

e-commerce in 1995. Then the Internet era arrived and a great many enterprises began to build websites and purchase IT infrastructure. In 2002, IBM brought in the concept of e-business on demand, thinking that e-commerce should change according to the features and development trend of different industries. E-commerce services became popular. In 2008, IBM introduced the concept of the smart planet which meant embedding sensors into all kinds of materials and forming the Internet of goods. Then the Internet of goods would be connected with the Internet to realize the integration of human society and the physical system. Once the smart planet was launched, the concept has been widely accepted by the world and has been a new development trend of e-commerce in the United States. The smart planet focuses on the whole business ecosystem. It not only includes enterprises, but also the government, communities and so on.

2.1.3 Orientation of U.S. E-Commerce Strategy

There are three levels of orientation of U.S. e-commerce strategy. Firstly, promote the rapid and sustained development of the relative industries by the construction of an e-commerce infrastructure. Secondly, promote enterprises to conduct e-commerce business by the implementation of U.S. e-commerce strategy. Lastly, promote global acceptance of U.S. technical standards and the legal framework of e-commerce to help U.S. enterprises open up the global e-commerce market. In short, the United States can gain sustainable and competitive advantages in the economy, science and technology and ensure its hegemonic status in the world. U.S. e-commerce strategy definitely complies with the national strategy.

U.S. e-commerce strategy was originated and formed in the Clinton administration. One reason is that Clinton was very successful with the economy. During the Clinton administration, the U.S. government achieved a financial balance, even a surplus. The other reason is that e-commerce was just in its infancy in the Clinton period. At that time, there was almost no law or policy about e-commerce. In order to ensure the smooth development of e-commerce, a number of strategic policies and laws relative to e-commerce were needed. There were no obvious changes in e-commerce after President George W. Bush took office in 2000, partly because the government had been busy fighting against terrorism since 9/11. The other reason was that the related strategy, policy and legal framework had been created in the Clinton period. So it remained to implement the strategy according to the existing problems. There were no other specific policies for e-commerce after President Obama took office in 2009. However, Obama launched an economic stimulus package with a total amount of \$787 billion, which would provide a good macroscopic environment for the development of e-commerce.

2.1.4 Contents of U.S. E-Commerce Strategy

The United States takes its place in the front rank of world e-commerce. Although the United States has strong economic strength and highly developed information industry, in the development of e-commerce, the government also plays an important role with an e-commerce strategy that promotes the rapid development of e-commerce worldwide. After extensive study and analysis, we summarize the following e-commerce strategy points:

(1) Creating a perfect market and institutional environment for the development of e-commerce

As a new business mode, e-commerce needs a good market environment including a social environment, competitive environment, management environment, service environment and so on. So the government emphasizes the marketing of e-commerce and the leading role of private enterprises in the development of e-commerce. Meanwhile, self-regulatory industry standards and a proper institutional environment are needed. In addition, it is necessary for the government to establish proper relative laws and regulations, tax policy, electronic payment systems, intellectual property protection, information security and telecommunications technology standards. Now there are a set of operable standards and relatively satisfactory legal system. For example, President Clinton promulgated the *Internet Tax Freedom Act* in October, 1998, stipulating Internet access taxes were exempted for three years. In June 2000, the House of Representatives passed the *Electronic Signatures Act*, stipulating the electronic signature had the same legal effect as a written signature. In addition, the Clinton administration announced that the export restrictions on data encryption product keys to e-commerce and Internet communication would be eased and some strong data encryption products would be allowed to be exported.

(2) Promoting the globalization of e-commerce to pave the way for e-commerce in the United States to open up the global markets

The Internet is globally open, which makes an online international free trade zone come true. Therefore, we must break barriers among regions and nations to establish international trade rules and a legal framework, including the recognition of electronic contracts, acceptance of electronic signatures and other similar licensing schemes, a dispute settlement mechanism and authority-responsibility. To this end, the government took the lead in the implementation of an online tax-free policy. Meanwhile the government advocated exempting the online tax all over the world. In May 1999, President Clinton persuaded other countries to support the suggestion of a permanent tax-free regime in e-commerce at the WTO Ministerial Conference. Although there were all kinds of concerns, 132 members still signed the *Declaration on Global Electronic Commerce*, stipulating tariffs in all kinds of online trade would be exempted for at least one year. Later the period was extended several times, which effectively stimulated the enthusiasm of U.S. enterprises to develop e-commerce business and further promoted the development of e-commerce.

(3) Promoting the e-commerce standard or policies of the United States to be accepted all over the world

The government considered that a different or multiple management system of the Internet would prevent the development of free trade and global business. So the government devoted great efforts to the acceptance of a *Uniform Commercial Legal Framework* by other countries and international organizations according to the principles of the *Uniform Commercial Legal Framework* and other related policies. In fact, the *Uniform Commercial Legal Framework* gained widespread support from developed countries no sooner than the framework was introduced and became the basic principle for global e-commerce legislation and policies. In December 1997, the EU and the United States issued a joint declaration on e-commerce and reached an agreement on the establishment of “duty-free cyberspace”. In May 1998, 132 members signed the *Declaration on Global Electronic Commerce*. Later, OECD countries accepted the proposal of tariff exemption. Meanwhile, the WTO approved the principle. In February 1999, the EU proposed establishing an international charter on coordinating global communication, especially in e-commerce. In addition, Japan and the United States issued a joint statement. In the joint statement, the two sides identified the common basic principles on tariffs, taxes, privacy, identity, etc. and emphasized the importance of cooperation in e-commerce. The joint statement indicated that the two sides intended to maintain and enhance the leading position by setting up the global e-commerce framework.

(4) Strengthening the investment in information infrastructure

On Sept. 1, 1991, the United States Senate passed The High Performance Computing and Communication Act of 1991 (HPCA) drafted by Al Gore who was a Tennessee senator at that time and later became the Vice-President of the United States. The bill was to build the “information highway” and the “highway” laid a fundamental path for American e-commerce development.

In 1992, President Clinton launched the idea of “the information superhighway” when he ran for the presidency. On Sep 15 1993, President Clinton issued The National Information Infrastructure (NII): Agenda for Action which illustrated the importance of a national information infrastructure, the principle of which should be followed when promoting the plan as well as the role the government must take and the benefits people would gain. “The information superhighway” was the foundation of e-commerce which not only suits the United States, but also the rest of the world. In 1994, the U.S. government proposed to build the Global Information Infrastructure (GII) to connect the whole world through satellite communications and a telecommunications cable network, forming the sharing mechanism and promoting the sustainable development of the world economy. “The information superhighway” construction has provided enormous economic and social benefits. During the first phase of the information highway construction, its success has brought great economic benefits and economic advantages for the U.S. economy during ten years. In 1999, the American government promulgated a “National Information Infrastructure” (NII) action plan, planning to invest \$400 billion to gradually make all users accessible

to a telecom cable within 20 years. In 2000, the U.S. government invested \$850 million in the information and communication industry. In addition, the government provided \$1.1 billion for the development of the second generation of the Internet, to provide a material and technical base for the development of e-commerce.

(5) Leading the enterprises to develop e-commerce

Implement “pull from the front and push from the back” strategy to encourage enterprises to develop e-commerce.

The so-called “pull from the front” was to formulate some preferential policy to encourage enterprises to adopt e-commerce technology. For example, when the Internet business activities were not popular, the government invested in the Internet to make people use the Internet for free until the Internet ran well. In addition, the government stopped collecting tax for e-commerce transactions and provided priority for goods transacted by e-commerce to pass through customs.

The so-called “push from the back” was to implement some sanctions or punitive policies to force those enterprises with little enthusiasm to adopt e-commerce technology. In the Clinton period, all government procurement and government bidding had been carried out online. If enterprises did not adopt e-commerce, they would lose a large market. Meanwhile, transactions arrived at in a traditional way would be postponed. In addition, in order to expand the e-commerce market, the government stipulated that online shopping at all the levels of government should reach \$450 million to cultivate the habit of online shopping. The U.S. government also developed a series of schedules to promote the informationization. The U.S. government announced in 1998 that import and export enterprises would lose their bidding rights for their export quota if they did not develop e-commerce transactions before January 1, 2000. Through the implementation of these measures, network and computerized financial services achieved fast development.

2.1.5 Effects of U.S. E-Commerce Strategy

The United States has obtained great competitive advantages from its information technology strategy which mean its economy has developed quickly for more than 10 years. Now the United States is far ahead of Japan in economic terms. The information strategy has created a large number of information companies such as IBM, Microsoft, Lucent and Cisco. Although we cannot predict how long the U.S. competitive advantage will last or what the final effects of U.S. e-commerce strategy will be, the preliminary results show that U.S. e-commerce strategy has brought rapid economic growth for two or three years and there is no sign the competitive advantage will be weakened. Meanwhile, the U.S. e-commerce strategy has created a large number of new information-based information service industry giants such as Yahoo, Amazon, Google and America Online. The construction of e-commerce infrastructure results in the rapid development of

software, the hardware industry and other related industries. E-commerce has brought a huge potential for rapid economic growth over a long period and the potential has not been fully realized yet.

Although e-commerce still occupies small size of the U.S. economy, e-commerce is growing at a rapid rate despite a recent economic downturn. Many new Internet-based companies and traditional producers of goods and services are committed to transforming their business processes into e-commerce processes to lower costs, improve customer service, and increase productivity. According to the Census Bureau of the Department of Commerce (Table 2.2), U.S. e-commerce sales in 2009 reached \$3.4 trillion, up from \$2.8 trillion in 2007 with a growth rate of 20%. E-commerce key sectors could be divided into B2B and B2C. B2B included the manufacturing business and merchant wholesales business while B2C included retail sales and selected services. B2B was still the main part of e-commerce in U.S., accounting for 91.2% of total e-commerce transactions in 2009. E-commerce transaction volume in manufacturing sectors reached \$1.86 trillion, accounting for 55.2% of total manufacturing revenues in 2009. The transaction volume of the merchant wholesale was \$1.21 billion, accounting for 35.9% of the total sales in 2009. B2C only accounted for 8.8% of total e-commerce transactions in 2009. The e-commerce transaction volumes in the retail and selected services were \$145 billion and \$153 billion respectively, accounting for 4.3% and 4.5% of total sales. Compared with revenues in 2008, total revenues and B2B e-commerce revenues declined because of economic depression. But retail e-commerce still increased in 2009 because people preferred to shop online for cheaper and more convenient purchase items.

Table 2.2 U.S. shipments, sales, revenue and e-commerce: 2009 and 2008 (billions of dollars)

Description	Value of shipments, sales or revenue				Distribution of e-commerce (%)	
	2009		2008		2009	2008
	Total	E-commerce	Total	E-commerce		
Total	20,144	3,371	22,470	3,774	100	100
B2B	9,602	3,073	11,630	3,482	91.2	92.3
Manufacturing	4,436	1,862	5,468	2,171	55.2	57.5
Merchant wholesale	5,166	1,211	6,162	1,311	35.9	34.7
B2C	10,412	298	10,840	292	8.8	7.7
Retail	3,638	145	3,953	142	4.3	3.7
Selected Services	6,774	153	6,887	150	4.5	4.0

From Fig. 2.1, we can see e-commerce in B2B and B2C has grown steadily since 2002. Only in 2009, there was a slight decline. But B2B declined faster than B2C because of the financial crisis. There was some rigid demand which would not vanish even in the financial crisis, especial basic demands such as food and

clothes. People preferred shopping online for cheaper goods so that B2C was still strong. Comparing e-commerce in B2B and e-commerce in B2C, we can see B2C grew faster. B2C in 2008 was over three times as much as that in 2002 while B2B in 2008 was just twice as much as that in 2002.

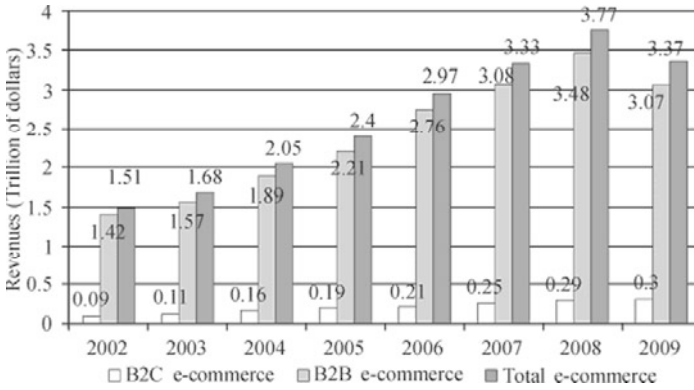


Fig. 2.1 B2B and B2C e-commerce in the U.S.
(Source: U.S. Census Bureau)

During these years, the U.S. e-commerce in manufacturing shipments and wholesale trade increased steadily in total except a slight decline in 2009. Comparing e-commerce in manufacturing shipments and manufacturing wholesale, we can see e-commerce in manufacturing shipments grew faster. The distribution of e-commerce in manufacturing shipments grew from 49.8% in 2002 to 57.5% in 2008 (Fig. 2.2), while the wholesale trade decreased from 44.5% in 2002 to 34.7% in 2008 (Fig. 2.3).

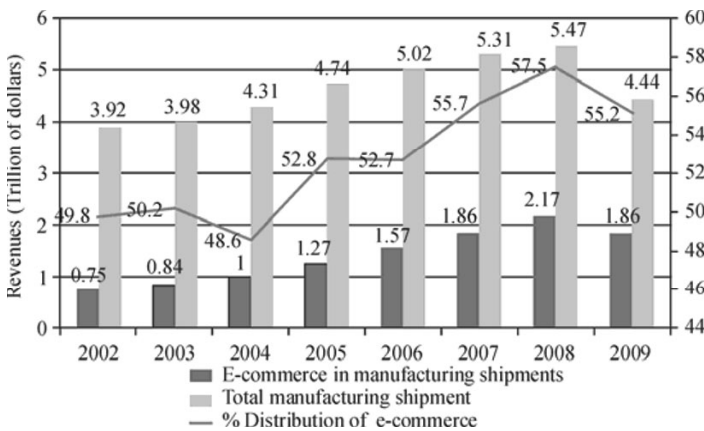


Fig. 2.2 The development trend of B2B in the U.S. manufacturing shipments
(Source: U.S. Census Bureau)

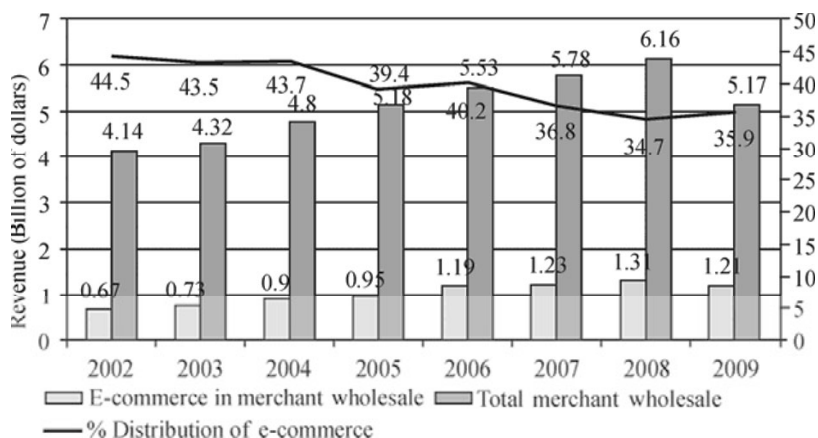


Fig. 2.3 The development trend of B2B in U.S. wholesale merchandise
(Source: U.S. Census Bureau)

During these years, the U.S. e-commerce in B2C increased steadily in total. Even in 2009, the distribution of e-commerce in B2C still increased from 7.7% in 2008 to 8.8% (Fig. 2.4). It can be seen e-commerce played a greater role in the financial crisis. The retail industry was one of the most important parts of B2C. From Fig. 2.5, we can see e-commerce in the retail industry increased in total although there was slight decline in 2006 and 2008.

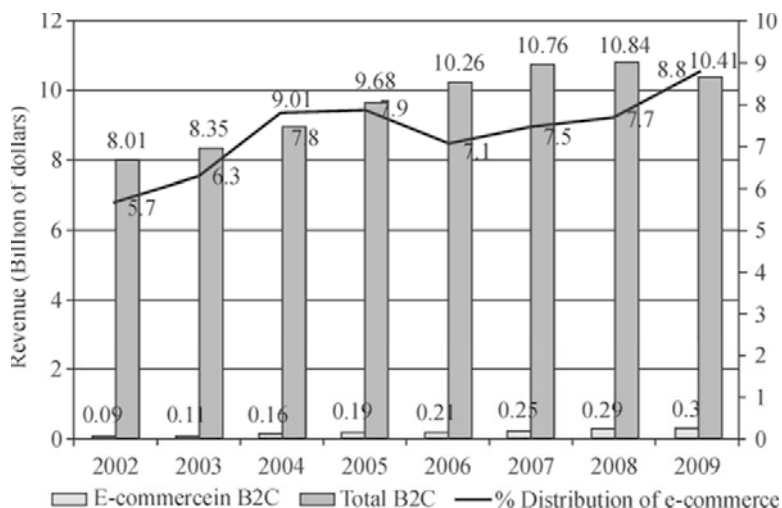


Fig. 2.4 The development trend of B2C in U.S.
(Source: U.S. Census Bureau)

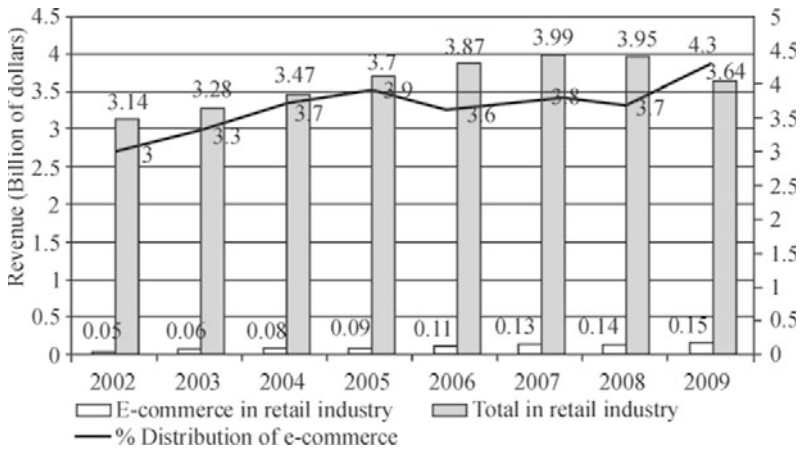


Fig. 2.5 The development trend of B2C in U.S. retail industry
(Source: U.S. Census Bureau)

In addition, the U.S. population that can access the Internet was estimated to be more than 205 million in 2010, accounting for more than 66% of the total population of the United States. At the same time, Forrester Research, an authority on e-commerce research, released a report entitled *US E-Commerce: 2005 to 2010*, which forecast and analyzed the trend in e-commerce in the United States over the next five years. Forrester forecast that the online retail sales in the United States in 2010 would increase to \$329 billion. Moreover, online tourism would be the biggest sector in all areas of online sales^[2]. According to another famous authority in e-commerce research in the United States, customer satisfaction with the e-commerce sector began to rebound in 2009, with a year-on-year increase of nearly 2%. The growth brought the aggregate score for the sector to 81.4, nearly matching its 2007 pre-recession high of 81.6. All scores reported were using the 100-point scale of the American Customer Satisfaction Index (ACSI)^[3].

A range of policy issues would affect the future of e-commerce activities such as taxation, encryption and electronic authentication (i.e. digital signatures), intellectual property protection (i.e. patent or copyright infringement), computer network security, privacy safeguards for individuals and organizations, and telecommunications infrastructure development. Now some of them are under discussion and the others have been well completed such as telecommunications infrastructure. Meanwhile, e-commerce is one kind of global activity involved in issues including national boundaries and it means that domestic and global e-commerce policies will become increasingly intertwined.

2.2 European Union

2.2.1 EU Basic Conditions

The European Union (EU) is an economic and political union of 27 member states, located in Europe. The 27 member states include France, Germany, Italy, The Netherlands, Belgium, Luxembourg, Denmark, Ireland, United Kingdom, Greece, Spain, Portugal, Austria, Finland, Sweden, Poland, Hungary, Czech Republic, Slovakia, Estonia, Latvia, Lithuania, Slovenia, Malta, Cyprus, Romania and Bulgaria. Besides the 27 member states above, the EU has signed some specific agreements with some small countries in Europe such as Monaco and Andorra. The EU has developed a single market which ensures the free movement of people, goods, services and capital, including the abolition of passport controls by the *Schengen Agreement* between 22 EU and 3 non-EU states. Sixteen member states of the EU have adopted a common currency, the EURO, as their legal tender, forming the Eurozone. With over 500 million citizens and a territory of 43,256.75 million square kilometers, the EU has become the largest economy in the world, generating nominal GDP of 16.28 trillion in 2010^[4]. Its GDP nearly accounted for one fourth of total nominal GDP of the world.

The EU traces its origins from the European Coal and Steel Community formed between six countries, France, West Germany, Italy, the Netherlands, Belgium and Luxembourg in 1951. The Treaty of Rome was signed in 1957 by the same states to create the European Economic Community. Since then, it has grown in size and in power through the addition of policy areas. In 1967 the Merger Treaty created a single set of institutions for the three communities, which were collectively referred to as the European Communities (EC). In March 1979, the EC formally established the European currency system which laid a foundation for the European single currency. In 1985, the Schengen Agreement led the way toward the creation of open borders without passport controls between most member states and some non-member states. In 1986, the Single European Act was signed, an agreement to dismantle barriers to internal trade at the end of 1992. On December 9 1991, the EC held a special summit and signed the “European Economic and Monetary Union Treaty and Treaty of the European Union”, that is “the Maastricht Treaty.” On November 1, 1993, the Treaty of the European Union was approved by all members and came into force. The European Community was formally renamed the European Union (EU). Since then, the single market has been established. Goods, capital, services and people could freely move within the EU member states. .

The EU is the largest economy with a unified economic, fiscal, monetary, foreign and security policy composed of many countries. However, different countries are in different situations. Germany, one of the EU member states, is the world’s fourth largest economy with nominal GDP of \$3,315.6 billion in 2010. However, Malta, only with nominal GDP of less than \$7.8 billion in 2010 is also

one of the EU member states.

The objective of the EU is to coordinate the economic, fiscal and monetary policy among the member states, use the single currency, implement a unified foreign and security policy, strengthening the cooperation in judiciary and internal affairs.

Although no single country in the EU has obvious advantages in the information industry, the EU has a strong advantage as an economic union. The EU's competitive industries almost cover all the critical areas of the information industry such as semiconductors, computers, consumer electronics, communications and software.

Currently, the EU's economic strength has surpassed the United States, ranking it first in the world. With the enlargement of the EU, the EU's economic strength will be further strengthened. There will be greater market size with new entrants into the EU. Moreover, the EU has a relatively free policy of exchange and cooperation, especially with some developing countries such as China. So the EU can be called an economic giant.

2.2.2 Background to EU E-Commerce Strategy

In the mid and late 1990s, the information industry had become the industry that attracted most investment, the fastest growth and the biggest potential for creating new jobs. Western media called it a "new economy", "digital economy" or "network economy". In fact, it was an economic revolution caused by information technology.

In the economic revolution, the European Union has been strongly developing information technology to improve the level of informationization. In 2009, the European digital economy continued to grow both in scale and scope. In the European Union, 60% of the population uses the Internet regularly (Fig. 2.6); Internet broadband can cover 94% of the population, 56% of households and 83% of enterprises. The rapid development of information technology and communication technology has brought a huge boost to the economy of the European Union. Between 1995 and 2004, nearly half of the increased productivity in the European Union was owing to the development of information technology.

However, the information industry in the European Union fell behind that of the United States, on the whole. The proportion of investment in information technology as part of GDP in the European Union and per capita investment were only half of that in the United States. The ICT (Information and Communications Technology) industry in Europe contributed about € 600 billion to GDP, accounting for 4.8% of the total GDP. Meanwhile, most of the research and development activities had achieved commercialization through production processes on a small scale, which were only 25% of all the research and development activities in the European Union.

Now there is only 1% of the population in the European Union who use an optical fiber high-speed network while it is 12% in Japan and 15% in Republic of Korea. Sixty percent of the population in the European Union uses the Internet regularly while about 30% have never used the Internet. The main factors that affect the percentage are age and education level. Large-capacity broadband is still at a preliminary stage presently. Although 80% of the fixed lines can sustain a network speed over 2 Mbps in the European Union, only 18% of the lines can achieve a speed over 10 Mbps. But in fact the speed is even slower. In addition, the degree to which different countries and different socio-economic groups use the network is not exactly the same. Young people are the main participants^[5].

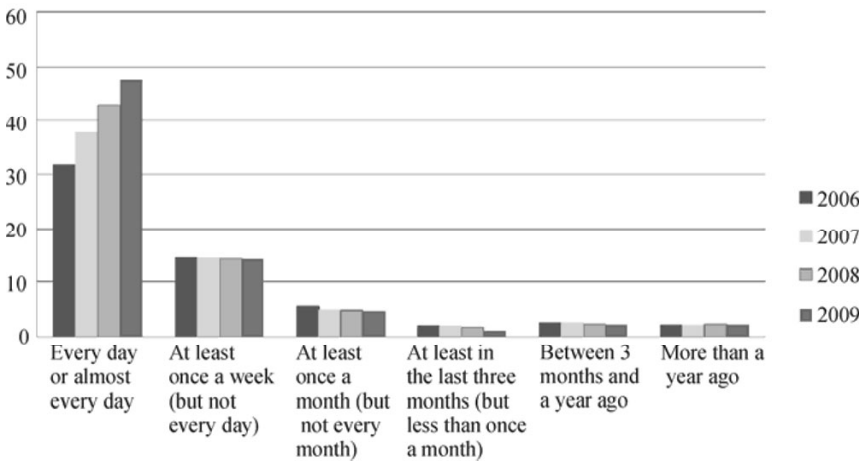


Fig. 2.6 Internet use as a percent of population (EU-27) by usage frequency
(Source: European Statistics)

Moreover, the information and communication technology professionals are getting scarcer day by day. It is estimated that there will be a shortage of 700,000 technical staff to meet demand in 2015^[6].

Development in the 27 countries of the European Union is very uneven. The Internet popularization rate in Nordic countries is higher than that in the United States, while it is far below the average level in the other European countries. This difference is even more obvious since the joining of the 10 countries of Eastern Europe, such as the Czech Republic, Estonia and Cyprus. For example, the development levels of e-government in Western Europe and northern Europe, such as Denmark, Austria and the United Kingdom, are high and in the forefront in the world but not in central and Eastern Europe.

The Internet access charges in the European Union are generally higher than those in the United States and Canada. It is proven that high Internet access fees mean a low Internet access rate. In the provision of website content, Europe falls behind the United States. The basic applications, such as email, web browsing, downloading of videos, can be fully sustained, but it cannot meet the high demand for high-definition television, high-speed downloading of images, and

simultaneous access to the Internet by family members etc.

Therefore, the development of e-commerce and e-government in different countries of the EU is not at the same level. There is a huge discrepancy among different social strata in getting public information. According to the data provided by the European Union Ministerial Conference held in Lisbon, Portugal, in December 2007, about 60% of the population of the European Union had access to government services, the latest news, the latest ways of social communication and the protection of consumer's rights to get more opportunities for advancement. However, about 30% to 40% of the population of the European Union was excluded from that lifestyle. They could not enjoy government services using mobile devices, computers or networks^[7]. In Europe, 54% of network users used e-commerce (buying or ordering online), but only 22% ordered goods from other countries in the European Union. More than 60% of cross-border transactions could not be made as the seller refused to deal with cross-border consumers.

To sum up, the relative weakness of the European Union mainly includes: high cost of Internet access and e-commerce, slow speed and low security, low popularization of information technology and knowledge, unbalanced distribution of informationization and so on.

In such situations the European Union is confronted with many challenges and fierce competition. It must make policy, strategy and undertake specific measures so as to advance in the information society, and realize the potential of information technology in promoting development, employment and social coordination. Europe has to strengthen political cooperation, be committed to the development of e-commerce. The *Digital Agenda* was launched on the understanding that the European Union faces the challenge and competition of the information society. The European Union wishes to make use of the "European digital plan" to promote the development of the digital economy and further win the information war. The European Union has realized that it is necessary to retain a leading position in some critical technological domains. Meanwhile, the European Union has to fully understand its disadvantages, sustain the strong and support the weak so as to catch up, take actions promptly to guarantee that the European Union is still the most competitive economic entity in the economic revolution. This is the e-commerce background of the European Union.

2.2.3 Orientation of EU E-Commerce Strategy

Due to various reasons, the overall level of information development in the European countries appeared to be lagging behind the United States and Japan, and the digital gap was becoming more and more apparent. In this case the EU, in such a dangerous state, decided to make some changes and develop the information industry, where competition is very fierce.

European began to develop the digital economy in the 1990s. At the beginning of this century, the EU found it lagged significantly behind the United States,

Japan and Republic of Korea in the field of information and communication technology. It was determined to catch up. In 2005, in order to construct the Information Society the EU launched a five-year strategic plan *i2010 Strategy*, proposing to enhance three important focal areas of the digital economy in 2010: First, remove the internal market barriers, create a unified European information space, take a united organ to coordinate and operate the telecommunications network services and operations of the whole EU, establish rich contents and numerous channels of information, support the creation and accession of enterprises to online content, and ensure the construction of a safe high-speed network. Second, raise the research investments in information and communication technology, encourage enterprises to make use of information and communication technology to improve labor productivity, so as to make information and communication technology one of the main driving forces of economic growth. Third, eliminate digital illiteracy to ensure that European citizens have some basic information and communication skills, such as text and data processing capabilities, provide more on-line public services such as e-government, e-commerce, e-learning, etc.

Today, as the i2010 strategic plan has already been completed, the informatization level in the EU has been significantly improved. At the same time, EU informatization development has effectively enhanced EU economic growth and has played an important role in the European social structure, social dynamics and so on. All EU leaders focus on raising the level of informatization. Particularly after the international financial crisis, the European Union must strive to develop information technology to seek for an effective way out of the crisis and revitalize the economy. The EU put forward a budget of €6 billion in 2009 and 2010, of which €5 billion was for the pan-European energy networks and broadband infrastructure, €1 billion to speed up the network upgrade.

The announced “European Digital Plan” is a significant part of “European Strategy 2020” to achieve stable, sustained and overall economic growth. Differing from the statement of the U.S. e-commerce strategy, the statement from the EU includes much more pragmatic components rather than the domineering components of the U.S. strategy. The statement of the EU e-commerce strategy is to vigorously develop the competitive information industry, and strive to surpass the U.S. in mobile communications. By implementing the e-commerce strategy in the EU and speeding up the construction of the European information highway, the European Union will be the most competitive economy in the world before 2020, and will promote the rapid development of the European economy for a long time. The EU is looking forward to gaining the dominant position in aspects of e-commerce law, standards and technology, as the largest economy.

2.2.4 Contents of EU E-Commerce Strategy

The Digital Agenda was officially launched on May 19, 2010, which identified what Europe needed to focus its efforts on to put this virtuous cycle in motion.

The agenda outlined seven priority areas for action:

(1) Creating a digital single market

The EU is composed of 27 member states. Although the 27 member states have a similar culture, there are still some differences in many aspects, such as regulations, laws, etc. Europe is still a patchwork of national online markets. Commercial and cultural content and services need to flow across borders, which should be achieved by eliminating regulatory barriers and facilitating electronic payments and invoicing, dispute resolution and customer trust. It is necessary to create a digital single market to benefit from this. More can be done and must be done under the current regulatory framework to put in place a single market. In order to achieve the goal, the EU plans to do the following: MY NOTE: we are already in 2013! The info below is already old. Have these plans happened yet?

- Simplify copyright clearance, management and licensing. By the end of 2010, the Commission will have proposed a framework Directive on collective rights management to enhance governance, transparency and Pan-European licensing for (online) rights management. The situation will be reassessed in 2012.

- Build a single market for online payments. Currently, few people in the EU can buy from another country online. Cross-border Internet shopping orders fail due to technical or legal reasons such as refusal of non-domestic credit cards. Establishing an online payment for cross-border shopping is necessary.

- Foster private and public e-commerce by modernizing e-signature rules in 2011 so that secure e-authentication is interoperable and recognized across borders.

- Strengthen citizens' rights and enhance their confidence by updating the EU's data protection regulatory framework by the end of 2010.

- Make sure that consumers are well protected in cyberspace by issuing a digital code that summarizes the rights of citizens in a cyber world in a clear and accessible way. Currently many consumers find it difficult to know what their digital rights are, especially when these are scattered across various complex legal documents.

- In order to give consumers the confidence that they can get a fair deal online, the EU online Trustmark and EU-wide online dispute resolution system for e-commerce transactions are being planned.

(2) Improving the framework conditions for interoperability between ICT products and services

In order to reap the full benefits of ICT deployment in Europe, it is essential to enhance the interoperability between devices, applications, data repositories, services and networks. There are various ways to improve the framework conditions for interoperability, one of which is to ensure that good ICT standards are available and used, notably in public procurement and legislation. Furthermore, the Commission plans to achieve better coordination between e-government and other public services by implementing a new European interoperability strategy.

(3) Boosting Internet trust and security

Without trust and security, people will not engage in any online activities. It is essential to address the rise of "cyber crime" and develop responsive mechanisms.

Meanwhile, the multiplication of databases and new technologies raise new challenges. The issues of privacy and the protection of personal data must be effectively solved online and offline. In order to achieve the goal, the EU plans to do the following:

- Set up a European rapid response system to cyber-attacks, including a network of Computer Emergency Response Teams (CERTs), and the European Network and Information Security Agency (ENISA).
- Formulate tougher laws to combat cyber-attacks against information systems.
- Support hotlines where children and parents could report illegal content online and work with EU countries to offer the teaching of online safety in schools.
- Operators and service providers will be obliged to notify breaches of personal data security. In addition, the obligation will be extended by the ongoing review of the EU's general data protection framework.

(4) Guarantee the provision of much faster Internet access

With competitively-priced fast and ultra-high-speed Internet, more and more people will be willing to use the Internet, which will give a fundamental boost to the development of e-commerce. The EU aims to bring basic broadband to all Europeans by 2013 and to ensure that, all Europeans would have access to much higher Internet speeds of above 30 Mbps and 50% or more of European households would subscribe to Internet access above 100 Mbps by 2020. In order to achieve this goal, it is developing a comprehensive policy, based on a mix of technologies, focusing on guaranteeing universal broadband coverage (combining fixed and wireless) and the take-up of next generation access networks (NGA) in most parts of the EU to get the speed above 100 Mbps. Meanwhile the EU and member states will stipulate many relative documents to encourage investment in competitive Next Generation Access networks.

(5) Encouraging investment in research and development

In order to achieve the goal, the EU plans to do the following: The ICT industry is a fast-developing industry in which the technology changes fast and research and innovations are continually required. Meanwhile, information technology has been implemented in the whole of European industry. If the investment in ICT R&D is not enough, the entire EU manufacturing and service sectors will be affected. Now the EU public sector spends less than €5.5 billion per year on ICT R&D, far below the levels of competing economies. In addition, market fragmentation and widely dispersed research funding limit the growth and development of ICT innovative businesses. In order to achieve the goal, the EU will leverage more private investment through pre-commercial procurement and public-private partnerships, by the use of structural funds for research and innovation and by maintaining a 20% yearly increase in the ICT R&D budget. Moreover, the Commission will also develop 'light and fast' ways for SMEs and young researchers to access EU funding for ICT research. Last but not the least, the member states will increase their investments in ICT R&D, to about double of annual public expenditure.

(6) Enhancing digital literacy, skills and inclusion

Nowadays, using the Internet has become an integral part of daily life for many Europeans. Those who rarely use the Internet are largely made up of people aged 65 to 74 years old, people on low incomes, the unemployed and the less educated. In addition, Europe is suffering from a growing professional ICT skills shortage and could lack competent practitioners to fill as many as 700,000 IT jobs by 2015. In order to narrow the gap, the EU plans to do the following:

- Bridge the digital skills gap by promoting greater coordination of ICT skills initiatives at Member State level, especially by proposing digital literacy and competences as a priority of the European Social Fund.

- Promote the supply and demand of ICT skills in the labor market by developing tools to identify the competences of ICT practitioners and users.

- Ensure that the public services websites provided are accessible to all citizens, including the elderly and persons with disabilities.

(7) Apply ICT to address social challenges such as climate change, rising healthcare costs and the ageing society

Applying ICT properly can address social challenges such as climate change, rising healthcare costs and the ageing population. To achieve these goals, the EU plans to do the following^[8]:

- Ensure that the ICT sector leads the way in reporting its greenhouse gas emissions, opening the way for other energy intensive sectors to follow.

- Set-up wide-scale pilot actions that give Europeans secure online access to their medical health data so that, wherever they are, they can also give doctors access to their medical records.

- Increase safety and medical assistance to Europeans.

- Propose a sustainable model for financing for the EU public digital library and for digitizing Europe's cultural works.

- Make e-government an everyday convenience for European citizens and businesses by establishing a list of common cross-border services.

2.2.5 *Internet Use and E-Commerce in the EU*

Because the Digital Agenda was only launched in 2010, effects cannot be seen right now. However, the EU *i2010 Strategy* has been completed and we can now see the results of *i2010 Strategy*. As mentioned before, the EU *i2010 Strategy* has three goals: to boost the single market for businesses and users, to stimulate ICT research and innovation and to ensure that all citizens benefit from Europe's lead in ICT. Over the past four years, ICT policies have confirmed their role as a major factor in Europe's economic and social modernization and have made Europe more resilient in times of financial crisis. In addition, e-commerce has developed, although cross-border e-commerce has not yet developed satisfactorily, which limits the impact of the Internet on the single market. Now let us take a look in more detail at the development of Internet use and e-commerce in the EU.

- Internet use

Now the number of regular Internet users is more than half of the total population, increasing from 43% in 2005 to 56% in 2008. Regular Internet use is becoming more inclusive. More and more disadvantaged groups (the inactive, the less educated and those between 55 and 64) have started to use the Internet in their daily lives. In addition, the EU has become the largest broadband market in the world with 114 million subscribers. Half of all European households and more than 80% of European businesses could access broadband Internet in 2009. With the extensive use of the Internet habits have changed a lot, especially in the means of communication. Now there are 80% of regular Internet users engaging in increasingly interactive activities, online financial services, sharing and creating new content and innovations. More and more online public services are provided, especially since the implementation of e-government. The supply of available services to citizens has increased from 27% in 2004 to 50% in 2007 while the supply of available services for businesses has increased from 58% in 2004 to 70%. About one third of European citizens and almost 70% of businesses in the EU use e-government services. Meanwhile, the investment in the ICT industry has largely prompted the development of information technology ^[9]. The EU has broken into Giant Magneto-Resistance technology, which revolutionized the hard disk business and won the 2007 Nobel Prize in physics. ADSL technology also has achieved rapid development as the basis for broadband Internet.

- Technology research and innovation

The EU fell behind the US, Japan and Republic of Korea at the field of ICT in the first decade of the 21st century. So the EU has increased the investment in ICT and launched many research programs to support the development of ICT and e-commerce development. The EU passed its largest budget of more than € 10 billion for ICT research and innovation from 2007 to 2013. There are also many research programs such as the Future and Emerging Technology schemes to support high-risk research to maintain EU's competitiveness in ICT. Meanwhile, the EU has invested a lot in e-infrastructure including GEANT, grids, supercomputer and data repositories that may be the most popular and important technologies in the future. In addition, the EU is committed to establish the partnership between public sectors and private sectors. In order to help EU industry achieve the leadership, the EU launched the *Artemis* and *Eniac* Joint Technology Initiatives, and the *Ambient Assisted Living* Initiatives. The *Artemis* and *Eniac* Joint Technology Initiatives focus on embedded computing systems, nanoelectronics address technologies to keep manufacturing competitive while the *Ambient Assisted Living Initiatives* focus on developing new digital solutions for Europe's elderly people. Moreover, the EU is devoted to design and establish a future Internet with faster speed, more data, more IP addresses and more security so that it can provide better infrastructure for the development of e-commerce. RFID technology is also one kind of important technology the EU is committed to develop. Although technology research and innovation is very important to develop e-commerce, marketing and good services are the key to the e-commerce growth. Considering the imbalance among member states of the EU, the EU has

made a great effort to coordinate research and innovation in Europe. The EU issued a renewed strategy for ICT research and innovation to facilitate the emergence of new markets and businesses for ICT ^[9].

- E-Commerce

With widespread Internet use, more and more Europeans go shopping online. The number of Internet users who ordered goods or services increased from 47% in 2006 to 54% in 2009. Taking the base into account, the United Kingdom and Denmark have achieved significant increases, although the growth rate is not high. Meanwhile some countries such as Poland, The Netherlands, Estonia, Latvia, United Kingdom, Cyprus, France and Belgium, have achieved faster development in e-commerce, gaining between 12% and 22% in the last three years. Compared with purchasing online, the Internet is mostly used to find information about goods and services. But it also has relevant economic effects because the information gathered online can help consumers purchase online or offline. The proportion of online purchase is between 30% and 80% while offline purchase is between 50% and 90%, depending on the country. In addition, travel and accommodation are the most popular categories among services while clothes and sports are the most popular categories among goods. Meanwhile, online financial services are becoming more and more popular.

Concerning enterprises, the average proportion of e-commerce turnover that was e-commerce in the 27 EU countries increased from 12% in 2007 to 13% in 2008. However, more and more enterprises are willing to purchase online instead of selling online because selling electronically requires setting up an IT infrastructure whereas buying online only needs access to the Internet. Among those enterprises selling electronically, tourism companies are the major ones, followed by information and communication and trade sectors. The machinery and electrical equipment sectors also play an important part, with online sales accounting for 23% of the total turnover. Moreover, more and more enterprises have their own websites to display their products, not only large enterprises but also small enterprises. In 2009, the average proportion of enterprises which had their own websites had increased from 61% in 2005 to 65% in 2009 (81% of small and medium enterprises and 90% of large enterprises).

However, cross-border e-commerce has not achieved great development because of the maturity of domestic e-commerce, the legal barriers, the size of the country and linguistic problems. The growth was just from 10% of Internet users in 2008 to 12% in 2009. In addition, the development of cross-border e-commerce is different in different countries. The cross-border e-commerce in Denmark and Finland developed better. Some countries such as Cyprus mainly depend on selling goods and services to other EU countries with a common language. Other countries such as France, The Netherlands, The United Kingdom and Sweden have a small market for cross-border e-commerce but a large domestic market. There are also some countries with low levels of both domestic and cross-border e-commerce ^[10].

2.3 Japan

2.3.1 Introduction to Japan

Japan is the most developed country in Asia. As of 2010, Japan is the third largest national economy in the world in terms of both nominal GDP of U.S. \$5.4 trillion and the PPP of U.S. \$4.3 trillion.

As an island country, the national surface-area of Japan just covers 377,873 square kilometers. About 75% of the national surface-area is taken up by mountainous regions and hills, and is unsuitable for agriculture. In addition, Japan is short of natural resources so that Japan has to import most kinds of materials. 94.7% of coal, 99.7% of oil, and 96.1% of natural gas are all imported. So how did Japan achieve such fast economic development? Japan is an export-oriented country. Its GDP mostly depends on imports and exports. Because Japan has no advantages in resources, Japan focuses on the development of core technology.

During the ten years from 1945 to 1955, the government carried out the reform of the economic system, realizing the transformation from a ruled economy to a market economy. From then on, the economy of Japan began to grow fast. During the 15 years from 1956 to 1970, the actual GDP rose 9.7% every year, exceeding the UK in 1965, France in 1967, and West Germany in 1968, quickly becoming the world's second economic power behind America. Since then, Japan was the world's second economic power until China became the second in 2009. Japan's main industries include steel, automobiles, engines, ship building, petroleum and chemical products, electronics and industrial machinery. In Japan, the transportation and communication industry are quite well-developed, which provides a great foundation for the development of Japan's economy. Large harbors such as Kobe, Yokohama, Tokyo, Nagoya, Chiba etc. are the ones whose annual throughput exceeds a hundred million tons. The total length of the railways exceeds 30 thousand kilometers and many high speed railways connect the industrial regions, forming a convenient railway network. The urban subway systems are quite well-developed and efficient. There are 1.2 million kilometers of public road, among which more than 100,000 kilometers are express highway. Air traffic is efficient, owing to large international airports such as Haneda, Narita, Kansai, and Fukuoka. The postal system is also well-developed, especially to individual homes. There are large shopping centers and wholesale markets spread all over Japan. Convenience stores exist everywhere and are of great help to local residents. This basic infrastructure is a benefit in the development of e-commerce.

Japan has a powerful information industry, in research and manufacturing, second only to America with sophisticated products. It owns a large amount of proprietary technology, has high labor productivity, advanced operations and management and excellent worldwide marketing and distribution. As it is superior in many specific products, this has a crucial effect in the development of the worldwide information industry. Japan is also second only to the United States in

developing products and in market share. In the key computer technologies Japan is just behind the United States. As for technologies like data compression and laptop displays, Japan is also in a leading position. The growth of the information industry helps in the development of the Japanese economy, and the output of the information industry helps to increase the whole industrial production in Japan.

2.3.2 *Japan's Information Industry Strategy*

Information technology development in Japan can be divided into three stages, and different stages have different strategies: The strategy of the first phase was largely importing. The strategic aim of the first phase was to rapidly narrow the gap with Europe and the United States, adopting a “used” policy, introducing a large number of advanced technologies from Europe and the United States, and access to patented technology through the payment of transfer fees. As early as 1957, the Japanese government passed the Electronic Industry Promotion Act, aimed at electronics and “micro” technologies. To enable Japan to take the lead in the development of the micro-chip industry, they have taken the following strategy: Introduced advanced key technologies from the West, made appropriate improvements and sold at a higher price in the domestic protected market. Then, they penetrated the overseas market at lower prices, with leading critical components and chips sold in large numbers. When they occupied a particular market share, they raised prices of the critical components and more advanced products to foreign consumers and earned high profits. The results of the first phase achieved the strategic goal of narrowing the gap with Europe and the United States.

The second phase was to develop Japan's own self-development of the technology. The strategic goal was to become the leader in information technology by following Europe and the US. The government established a strategy “*Building the Country through Science and Technology*”, emphasizing basic research and self-development of technology, through technology-intensive and mentally intensive “software technology” implementation. There were two specific measures: firstly, to develop and implement the “Technology City” program in the 1980s, making use of the research achievements of universities and research institutes to realize rapid industrialization. The development mainly focused on electronics, biology, software and other high-tech industries. Secondly, in July 1986, they formulated the “*Industrial Development Promotion Law of High-Tech-Intensive Areas*” to promote the development of high-tech industries and establish a series of high-tech parks, such as Kyushu Silicon City, Tsukuba etc.

Through the development of the first two phases, especially the great success of microchips, Japan has become a leader in the information industry. Between the late 1980s and the early 1990s, Japan owned six of the world's top ten micro-chip companies, five of the top ten electronics companies. In 1996, the Japanese

information industry's production amounted to 37.52 trillion yen, accounting for 11.4% of the total amount of Japan's industrial production. The information industry had become a locomotive for economic development. Since 1996, the number of patent applications in Japan has surpassed the U.S., ranking first in the world.

The third stage was to strengthen international technical exchange and cooperation, using the world's technical personnel to serve Japanese information technology development to maintain the leadership of Japan's information technology. The first main measure adopted was to increase the investment in research and development. The Japanese National Institute of Science and Technology increased the total budget to 162 billion yen in 1997, up by 14% compared to previous year. The second measure was to establish a large number of multinational research institutions. Japanese companies set up 224 research institutes in the United States, more than any other country. Japan also signed a wide range of bilateral scientific and technological cooperation agreements with other countries, in which the *Japan-US Science and Technology Agreement* planned cooperation in 50 projects in 1991 alone. Japan also established a ten-year plan for "*Developing 5th Generation Computer Project*", aiming to "overthrow IBM", and this was implemented as MITI's national project.

In 2000, the Strategy Headquarters of Japan established the e-Japan strategy, aimed at making Japan the world's most advanced IT country, which clearly stated, "by 2005 we will build an environment in which 30 million families can access broadband Internet and 10 million families can access ultra-wideband (30–100 Mbps) Internet". This goal had already been reached ahead of schedule in 2003. On July 2, 2003, Japan's IT Strategy Headquarters, whose minister was Prime Minister Junichiro Koizumi, established the *e-Japan Strategy II* which adjusted the focal points and the development direction of information technology. *E-Japan Strategy II* clearly stated that targets of the e-Japan strategy of popularizing information and communication infrastructure in November 2000 have been fulfilled ahead of time. Japan's information technology will shift to "support using information technology and create a new industry in the medical, food, life sciences, SME finance, education, employment and administrative fields".

After the first IT revolution, which was marked by coming to an end ahead of schedule, the Japanese government put forward the development direction for u-Japan (where the "u" abbreviation for ubiquitous means "everywhere"), following on from e-Japan. The release of u-Japan strategy meant that Japan formally entered the second IT revolution.

In u-Japan, the idea of everywhere is expressed as a u (ubiquitous) and is u-universal, u-user-oriented and u-unique. U focuses on infrastructure, guides the infrastructure driven by technology, and connects all people and objects in series by the "everywhere" infrastructure, achieving the goal of "anyone, anywhere can access the Internet at any time to find anything". The three small 'u' focus on promoting the results of future expectations: universal to let everyone (including the elderly and physically and intellectually disabled people) easily use it,

achieving more intimate contact between people and communication; user-oriented stresses that the new product should pay attention to the user's convenience, combining the user-oriented and production-oriented; unique means a social personality and vitality springing up through ICTs, creating new business forms and services, and creates a new social system and values which means that it activates resources to promote regional regeneration. Compared with the e-Japan, u-Japan has achieved a new leap forward. For example, in broadband, u-Japan not only has promoted the development of the broadband infrastructure, broadband technology is also proposed as a useful tool in life and industry, creating an environment in which the seamless way is used in the wired and wireless Internet. In addition, *u-Japan* also proposes to use ICTs to solve social problems. In *e-Japan*, Japan had proposed the goal that 30 million families could achieve high-speed Internet access and 10 million ultra-high-speed Internet access. But some cities cannot use xDSL technology access. In view of this situation, u-Japan proposed to increase the overall level of broadband so that all Japanese can use a high-speed or ultra-high-speed network in 2010.

At present, the Japanese government is actively implementing *i-Japan2015*, which was proposed in 2009, hereinafter referred to as *i-Japan*. It hopes, through the implementation of *i-Japan*, to develop Japan's new industries which support the development of the long-term economy, to strive to develop environmental technologies which are presented by green information technology and intelligent transport systems and other major projects. Compared to early IT development policies, the perspective of policy planning was changed. Previous information strategy emphasized the R&D of digital technology, demanded a comprehensive industrial development. Summing up the past, *i-Japan* now pays more attention to people's needs, focusing on creating the digital society which is accepted by most people, through the application of digital technology, bringing the lives of Japanese the greatest convenience. *i-Japan* comprises three key components, setting up e-government, health care and education, activating industry and nurturing new industries, as well as rectifying the digital infrastructure. In the specific measures there are many strategies deserving concern. For example, in the building of e-government, the setting up of a chief information officer (CIO) by amending the law, to be responsible overall for e-government and administrative reform, and equipping a team of experts to help explore new mechanisms to promote e-government. Widespread implementation of the "National Electronic Personal-Mail" will mean people can access and manage tax information, pension records, military service documents and personal health insurance information and other information related to various administrative matters. In addition, *i-Japan* plans to further improve the digital infrastructure, making an ultra-high-speed broadband upgrade to "fixed broadband speeds up to Gb-class and a mobile broadband speed of 100 Mb-class".

From *e-Japan* to *u-Japan* then *i-Japan*, the information construction in Japan will have achieved a "triple jump" within 15 years.

2.3.3 Background to the Japanese E-Commerce Strategy

From the 1950s, by exploiting the technology gap between home and abroad, Japan's economy maintained rapid development for nearly 40 years, by introducing new technologies. At the same time, the information industry had leapfrogged the United States. In the 1970s and 1980s, even through the oil crisis, Japan's economy still grew at high speed, making many Japanese optimistic that they could become the world's largest economy with a little more effort. However, when it came to the 1990s, a big reversal happened. The information industry in the United States was booming and the economy kept growing rapidly. Because of a bubble the Japanese economy burst, the banks' had bad debts and other issues. The Japanese economy has been in the doldrums and that has resulted in a "lost decade." Japan had been unable to shake off the recession following the deflation which appeared in 1991, while in the United States the so-called "new economy" represented by the information industry grew up and a number of information industry giants such as IBM, Intel, Microsoft, Cisco, Lucent, Amazon, AOL, Yahoo, Google etc. were born. The new economy stimulated robust U.S. growth for 10 consecutive years, while Japan lost its drive. After ten years of development, the United States once again had flung Japan far behind.

Recalling the painful experience, the reason why they missed a golden opportunity to overtake the U.S. and why the economy fell into trouble, the Japanese believe can be attributed to the fact that they lagged far behind the United States in information technology, so Japan decided to catch up. Based on such a clear understanding of the huge gap, the Japanese government proposed the "Construction of a High Degree of Information Society", and this quickly evolved into the strategy "support Japan by the Information Industry". In this case, the focus on the application of information technology gradually shifted to e-commerce. The development of information technology almost needs no materials to be imported, only a need to use local resources, and this has avoided the disadvantages of limited resources, to the advantage of Japan. So Japan, following the United States, has developed its own e-commerce development strategies. From 1996, the Japanese government began to increase investment in IT, from 1.3 trillion yen in that year to 1.7 trillion yen in 2000. Under the impetus of the government, the investment from the private sector is even much greater, 7 times more than the annual government investment. The Japanese government shifted the focus of development to the information industry. The Japanese government in 2000 launched *Digital Japan Beginning—the Action Plan*, and e-commerce strategies had begun in Japan. The action put forward directional suggestions from the national strategy, including networking, broadband services, mobile communications, image networks, electronic commerce and so on. In July, 2000, the Japanese government decided to establish an IT Strategic Headquarters, to comprehensively promote the IT revolution, in the difficult circumstances of economic structural reform, pinning the hope of Japanese revival on IT and e-commerce.

After 2001, the Japanese IT industry started to slide synchronously with the

global IT industry, especially after the attacks of 9/11 on account of the weakening demand for information technology and related industries. The Japanese IT giants all had a deficit in 2001 except for Sony. Equipment investment fell to historically low levels. However, this did not affect the strategy of developing the information industry. In May 2002, IT Strategy Headquarters issued an e-Japan priority plan to correct the problem, and the Japanese Industrial Competitiveness Strategy Association also reported strong promotion of the IT revolution as a strategic area. In order to reverse a difficult situation, a cut in IT investment tax was proposed. The successful implementation of e-Japan strategy promoted infrastructure construction in various regions in Japan. In May, 2004, Japan's IT Strategy Headquarters issued a u-Japan strategy, hoping by means of the u-Japan project to promote the development of the Japanese economy, to reduce the digital isolation of Japan, and to narrow the gap with advanced countries. In 2009, many countries launched new information technology strategies. The Japanese government, which was unwilling to lag behind, added a 1 trillion yen budget allocated for the development of information technology, and in such a context two IT development policies were passed in a row, which were a 3-year emergency plan and a long-term IT development plan "*i-Japan Strategy 2015*" for the next five years. They will pool resources to develop e-government and e-autonomous organizations, to promote digitalization of the medical, health and education sectors.

2.3.4 Strategic Orientation of Japanese E-Commerce

The aim of Japanese e-commerce strategy not only lies in promoting the development of e-commerce, but also in promoting economic and social development ubiquitously throughout the whole network and enhancing the competitiveness of Japan. By catching up with Europe and the United States through e-commerce, Japan's overall economic objectives of catching up with Europe and the United States can be achieved. Through the implementation of this ambitious strategy, Japan hopes to be the most advanced country in information technology and overtake the USA within 5 years. Japan's economic downturn resulted in the information products market continuously slipping after 2001 but, in the Japanese view, information technology is still the "Light Tone" of future development, which can help Japan get rid of the problem. Therefore, the orientation of Japanese e-commerce strategy is to take advantage of e-commerce, get rid of the predicament, improve the national competitiveness and promote the revitalization of the Japanese economy to achieve the dream of overtaking the United States as the world's economic and technological superpower.

2.3.5 Contents of Japanese E-Commerce Strategy

In the new century Japan regards electronic technology, biotechnology and new materials technology as three big pillar industries, among which electronic technology is ranked the first. Facing the revolution in e-commerce driven by rapid development of the Internet, the Japanese government saw a new opportunity to stimulate economic growth and strategically decided to launch an Information Industrial Revolution and to build the nation relying on the information industry. With the vision of “e-Japan as No.1”, Japan, the world’s second largest economy, was determined to fundamentally reform its economic structure and to enhance international competitiveness during the Information Industrial Revolution. Japanese e-commerce strategy was stated in the *e-Japan Strategy* and *Action Plan* formulated by the Japanese government.

To achieve the ambitious goal of “e-Japan as No. 1”, the Japanese government gathered more than 100 prominent people from industrial circles, academic circles and government departments, coordinated and cooperated with Japanese computer communication sectors, telecommunications sectors and the Telecommunication Agency, forming the “Next Generation Internet Policy Research Group”. This group was divided into several working teams, which respectively study the economic, technological, social and legal issues related to the network. In June 2000 *Digital Japan Beginning—the Action Plan* was put forward in the form of a government document.

The action plan classified all policy problems related to the IT revolution into three categories and respectively presented directional opinions from the viewpoint of strategy and at the macroscopic level. The first category referred to policies related to network infrastructure, which suggested thoroughly applying the principle of market competition, to promote the diversification of networks, to decrease the online fees and to push forward the development of the bandwidth service. Up to now the number of Internet users in Japan has ranked third in the world, only next to the United States and China. These motivating policies about network infrastructures will further encourage the Japanese to use the Internet, and thus further increase netizens.

The second category contained the policies related to technical platforms, which aimed to develop the world’s leading technology in Japan and seize the right to establish technical standards. The Action Plan advised an increase in investment in the leading technical fields of great potential like mobile communications and image networks, then to claim the right to establish technical standards under the principle of remaining in cooperation and competition with the United States. In the rapidly developing Internet world, whoever establishes technical standards will gain an absolute advantage. The above suggestion from the Action Plan will prove to be farsighted.

The third category focused on the e-commerce policy, of which the core problem was to build a highly reliable business platform. In the Action Plan, matters concerning the growing trend of e-commerce, the construction of electronic certification systems, the definition of network service suppliers’

responsibility, promotion of cross-border e-commerce and network domains were analyzed and discussed in detail. After a comparison with the United States and the European Union, suggestions relating to the situation of Japan were put forward.

It can be seen from the Action Plan that Japanese e-commerce strategy is not an isolated plan, but is an important component of national strategy bound up with the fortunes of the whole nation. To make a conclusion, details about Japanese e-commerce strategy are summarized as follows:

(1) Introducing competition mechanism to strengthen the construction of a network infrastructure, to accelerate the construction an ultra-high-speed network infrastructure and to promote the development of an ultra-high-speed network

It was essential for the purpose of the realization of the IT revolution that all people can utilize, at affordable rates, the network infrastructure that enables distribution of a huge amount of information, regardless of time and distance, among such factors as individuals, businesses and governments. While increasing the investment in network infrastructure, the principle of market competition was applied, the online fee was decreased to promote the diversification of networks and push forward the development of the bandwidth service. The targets for establishing the ultra-high-speed network infrastructure were: Promoting the establishment of one of the world's most advanced Internet networks within five years, and enabling all the people who need it to have ultra-high-speed access networks (30 – 100 Mbps as a standard) at affordable rates^[11], which meant providing ultra-high-speed constant access to 10 million households by optical fiber and high-speed constant access networks to at least 30 million households by DSL and CATV routes by 2005. Using the ultra-high-speed network, movies of two hours could be sent and received in 15 min while animation images could be transferred instantaneously. In addition, through the Internet, people could engage in remote medical diagnosis and remote property negotiations. To enable all people to have access to the network, the Internet fee started to reduce from 2001. The preliminary goal was to integrate with the world price at 2,000 yen per month and the ultimate goal was for it to fall to about 1,000 yen.

In order to introduce a competition mechanism, it was necessary to modify the laws relevant to the communication industry so as to be open to the public. All public channels owned by communications companies should be open to facilitate the laying of optical fiber and the DSL lines. The Electronic Transactions and Contract Intermediary Bill were stipulated to perfect electronic contract management. Laws should always be beneficial to the development of e-commerce. The introduction of a competition mechanism was intended to cultivate and expand the consumers of e-commerce in Japan, strengthening the network infrastructure construction aimed at increasing consumers, lowering the cost of e-commerce and laying a solid material base and market foundation for e-commerce development.

(2) Intensifying the support for the development of commercial chips which is also a basis of e-commerce, so as to ensure the leading status in the field of commercial chips

In the government expenditure budget on technology 2001–2005, the expenditure on commercial chips reached \$1,850 million, 40% more than that of the last five-year plan. In early 2001, soon after the Japanese government allocated \$250 million as special funds for manufacturing a new kind of high density chip, the Ministry of the Economy, Trade and Industry (METI), cooperating with eleven semiconductor manufacturers, including Fujitsu, Hitachi, Panasonic, Mitsubishi, NEC, SHARP, SONY, Toshiba and other international manufacturers, put the nanometers plan *Asuka 90* into practice. In early 2002, the Diet of Japan passed another \$2.4 billion additional budget on technology to share the construction cost of 0.10 micron microchip testing plants. The Japanese government, together with 25 companies, established two sterile rooms especially for testing higher density system chips. In the following years, Japanese chip giants continuously invested a tremendous amount of money in the most advanced chip technologies. New lines of 90 nanometers had been built successively by 2004. The government planned to promote Japanese SOC design techniques to 70–50 nm within two years.

(3) Perfecting e-commerce relevant laws and regulations, eliminating blind spots in e-commerce laws, establishing a perfect legal environment for e-commerce and protecting the legitimate rights and interests of e-commerce participants

The effects mainly included:

- Checking regulations and modifying relevant commercial acts, altering laws and regulations that obstructed the development of e-commerce and establishing the legal force of e-commerce documents.
- Protecting and utilizing intellectual property reasonably, to promote the circulation of information and to actively protect consumers' benefits.
- Implementing electronic signatures and authentication systems and establishing the basis of public personal authentication.
- Solving the problems of language, exchange rates and tax to keep e-commerce laws in line with international rules.

In order to realize the reasonable protection and utilization of intellectual property on the Internet and ensure the normal distribution of computer software, movies and music, imperative laws on copyright and patent rights were enacted. For the smooth circulation of information on broadband networks, rules on transactions of information content from broadcasters and television stations should be formulated, together with corresponding technical measures to avoid bad behavior such as illegal copying. To properly settle consumer complaints, measures like providing relevant information and protecting private information were adopted to positively protect the interests of consumers. For the smooth implementation of an electronic signature and certification system, the legislation of the Electronic Signature Law had been completed in 2001, which adopted the international two-way acknowledgement system in authentication services, along with investigation and technology assessment concerning the security and reliability of the authentication business. In addition, universal development activities were held among Japanese citizens. To allow local public organizations to use residents' basic accounts data, the public personal authentication system

was established, on which empirical experiments could be made and the legal system would be constructed.

In order to overcome obstacles of language, the jurisdiction of courts, applicable laws based on the Japanese legal system, taking rules about the infringement of intellectual property rights, the protection of the interests of consumers, information security, international jurisdiction and so on from WIPO, OECD, UNCITRAL, and the Hague Conference on Private International Law and WTO all into account, the government drafted the trans-border e-commerce Contract Text, actively formulating the legal regulations in line with the international standards, and set up quicker and low-cost dispute processes, except for judicial adjudication.

(4) Motivating enterprises to adopting e-commerce by completely implementing electronic government

The entire business process is tightly linked to government departments in many activities, such as handling the export and import licenses, customs declarations and inspection of imports and exports, export rebates, quota bidding, business tax payments, government procurement bidding. If all related government departments adopted e-government, enterprises would not walk a step forward without e-commerce technologies. As a result, enterprises would be compelled to introduce e-commerce technologies to business. In this respect, various measures the Japanese government adopted are as follows:

Regarding administrative measures such as the informationization and electronization of public affairs, the government's objective was to make electronic information as valid as paper documentation in official affairs by 2003. In 2002, a universal basic system was established which realized the electronization of the process of application and submission in all ministries of the government. In addition, the Japanese government actively promoted administrative information computerization and government procurement electronization. According to the *Basic Principle on Providing Public Administration by Electronic Means* and the *Policies on Promoting the Implementation of Electronic Information* formulated by relevant ministries, taking basic information about the administrative organization, budgets and final settlement, and data about the effective use of social capital as the key points, they achieved the goal of providing administrative information by electronic means.

In order to realize the electronization of the process of application and submission, the following tasks were achieved:

- Construction of authentication system and general acceptance system.
- Construction of electronic payment systems.
- Gradual construction of some electronic formalities systems.
- Effective improvement of internal transaction efficiency, construction of auxiliary database for examination and approval, adjudication and office-copy management.

To bring about the electronization of government procurement, measures taken included:

- Dealing with non-public utilities, according to results of the study on

electronic submission and opening of tenders, establishing and test running related operation systems.

➤ For the public utilities, adopting an electronic procurement system for certain utilities on a fixed scale and establishing the system in support of various bidding modes.

What's more, all ministries and departments were able to process affairs without any paper. To match the requirement, they enhanced the current system performance to connect the ministries, departments and local branches through a LAN, building a network of state and local public organizations. They realized the informatization of public domains such as science and technology, academic research, art, culture, health care, medical treatment, welfare, the environment, disaster prevention and public traffic by carrying forward R&D. They positively introduced an advanced information communication platform and put key planning into efforts in fields of ITS and GIS. They were expected to build an electronic government at full strength before 2003. That was to say, administrative affairs like the disposal of internal official documents, laws, files and statistical investigation data in government agencies should become totally computerized and paperless. Meanwhile, applications, declarations, annual revenue and annual expenditure between central and local government and citizens, government and enterprises, purchase of supplies and calls for bids should all be processed online.

As for the public services and facilities, the government would build a super-fast science and technology information network, establish the virtual research environment, a database of science and technology and cultural information in an integrated system, realizing the informatization of domains such as health care, medical treatment, hygiene and welfare etc., constructing an environmental integrated database, GIS and comprehensive disaster prevention information system.

(5) Guaranteeing the security and reliability of the infocom network to make e-commerce securer and more reliable than traditional commercial activities

In order to build a highly reliable e-government, the following tasks were carried out:

➤ Ensuring the information security of e-government, to assist the information security work of each ministry, department and local public organization, constructing an integrated system which could evaluate and monitor the security level of all entities and send emergency responses.

➤ Continuing to formulate and deliberate the security plan in all ways including simulation attack experiments so as to find the best response measures.

➤ Vigorously supporting the information security work in local public organizations by establishing the emergency corresponding system and implementing local finance measures.

To strengthen countermeasures to handle terrorist activities on the network, the Japanese Government sectors collected and recorded information about terrorist activities to build a "terrorist network correspondence database" shared by official and non-governmental bodies, while enhancing the functions of the database, fostering senior professional and technical personnel who could handle

emergencies. They increased the information security consciousness of all citizens and implemented a training plan in various fields with the help of local organizations. To help these local organizations adopt information security policies, the government applied the following two methods:

- The official information security organs and groups provided security information to local organizations and enhanced the guidance function. Police agencies in Japanese Prefectures could accept appeals from non-governmental organizations and strengthen the system of high-tech crime countermeasures.

- Along with the popularization of information security, they encouraged private enterprises to introduce advanced safety equipment and develop an information security service.

Apart from all the above measures, the government also encouraged the development of basic technologies like cryptology and information security evaluation. Besides, while not leaking state secrets, supply technologies connected national defense and public security with other government departments and the people.

(6) Nurturing high-quality human resources

As in other countries, a skills shortage presented the biggest problem during Japan's development of e-commerce. According to a joint investigation by Microsoft and IDC, Japan's scientific skills gap over the next 10 years will cover about 1.6 million to 4.45 million jobs, which mainly is due to a lack of IT skills. In order to meet the manpower demand during the development of the IT industry, the Japanese government also proposed a two-part strategy: On the one hand they trained high-level talent in e-commerce in Japanese universities and enterprises, and put forward the grand plan that the number of Japanese PhD's and Masters engaged in the IT industry would exceed that of America in 2005. On the other hand, they absorbed foreign e-commerce talent to serve Japan's economic construction by striving to attract 30,000 outstanding foreign IT technicians to work in Japan by 2005. Japan's Prime Minister and senior leaders from enterprises went to India, China and other countries, especially to developing nations. Simultaneously, the government also emphasized the strengthening of IT education for ordinary citizens, to enable them to enjoy the conveniences brought about by a highly developed IT society.

Overall, Japan's *Action Plan* aimed not only at promoting the domestic development of e-commerce, but also at promoting Japan's economic and social development in the network environment. The *Action Plan* reflected a strategic choice of Japan in the 21st century, which quickly absorbed the experience of developing e-commerce in America, Europe and other countries and designed a suitable future development road with Japanese characteristics, as the outstanding feature.

2.3.6 Strategic Efforts

The *Electronic Signature Law* was promulgated and put into effect, while other relevant regulations are advancing. E-government has been realized; great achievements have been made in the training of all types of personnel. This is the material guarantee of Japan's economic growth.

The Government's powerful promotion of information technology has made the industry develop rapidly. The number of Internet users grew by 18% from 58 million in September 2008 to 68 million in September 2009, which gave Japan the second highest growth rate Asia^[12]. By February 2009, mobile phone net users reached 31.41 million. Through the development of the mobile net, the service to business has been greatly extended. The citizens of Japan can not only shop on the Internet and settle their business, but they can also travel and buy movie tickets using the Internet.

Although the Japanese economy is stagnant and retail sales have declined by around 1% annually for years, revenues of e-commerce still expanded by around 17% since 2005. According to the analysis of Euromonitor and McKinsey, revenues of e-commerce would grow at around 10% annually from 2010^[13]. Online shopping in Japan grew by 22% between September 2008 and September 2009. This increase in online retail is happening for a number of reasons. Firstly, people paid more attention to the convenience and price rather than the security and privacy in the midst of the global recession. In addition, the recession brought strong attention to old and antiquated business models that were no longer going to work. Online retail offering cheaper overheads, cheaper marketing costs, and a growing global customer base soon became a popular business model.

Amazon Japan, Rakuten and Yahoo Japan are all the leading e-commerce players in Japan. Among them, Rakuten is the greatest e-commerce enterprise in Japan. Rakuten has pursued a "shopping mall" strategy, providing all the services that enable merchants big and small to set up digital shopfronts, including hosting their sites, broking their advertising and processing their payments. This greatly simplifies things for both seller and buyer. There are around 90 million Internet users among Japan's population of 130 million; a massive two-thirds use Rakuten. Online retailing, though growing fast, remains small in Japan at a mere \$30 billion a year in sales (excluding digital downloads and travel), but Rakuten handles nearly one-third of all transactions. Now the company is using its strength at home to go abroad. Rakuten has closed a transaction to acquire a 75% stake in Ikeda, a leading provider of e-commerce services to many of Brazil's largest retailers^[14].

Through legislative activities in recent years, Japan has already formed a *Fundamental Law of Japanese Information Technology*, a legal system which includes the *Constitution of Japan*, *Japanese Civil Code*, *Commercial Code of Japan*, *Japanese Economic Law*, *Intellectual Property Law*, *Penal Code*, and *Procedural Law* together with more than 200 legal operations departments to coordinate with the development of e-government. The e-government regulations such as electronic signature and identification, the legality of electronic evidence, electronic documents and e-commerce behavior, internet ads, consumers'

protection, internet crime, protection of personal information, protection of intellectual property, e-voting, illicit competition rules, etc. have solved the bottleneck problems limiting e-government development.

Japan has its own distinguishing features in informatization. Based on the high popularity rate of the PC and the mobile Internet, together with a variety of kinds of ADSL such as fiber optics, wireless and special lines, Japan planned to have 5 million broadband net users by the year 2012. Up to the end of 2008, the broadband user numbers had reached 3.01 million; the average net speed was ten times that of America, which is the fastest in speed but lowest in charge.

Through the promotion of e-commerce's strategy, trade strategy and long-term structural adjustment, Japan has successfully come back on the right track.

Under the direction of Japan's business strategy mentioned above, Japan's government, enterprises, schools and individuals all devoted themselves to vigorous business activities. Main features are as follows:

(1) Carrying out the B2B e-commerce pattern in multinational companies, for Japan's international corporations are almost all huge ones, and the trade volume of each may exceed that of many small nations, which make these huge corporations dominate the Japanese economy. If these huge corporations develop, so does the Japanese economy. So the Japanese government first promoted the B2B e-commerce pattern in the famous transnational corporations.

(2) Considering Japan's advanced manufacturing technology, Japan devoted major efforts to develop manufacturing e-commerce. Japan's manufacturing capacity and manufacturing technology are among the best and no other country can match them. Applying e-commerce in manufacturing industry can help Japan exploit the advantages, be more competitive and push forward its economy. Therefore, Japan's manufacturing industries are also actively using e-commerce systems.

(3) Adopting the B2C e-commerce pattern in Japan based on large numbers of convenience stores in the retail sector. Similar to Chinese small grocery stores, there are numerous convenience stores in Japan. Differing from Chinese stores, these convenience stores are part of a chain operation on a network, and point of sale (POS) and multimedia terminals are widely applied. The tremendous potential of online transactions in convenience stores was gradually realized, thus Network Enterprises, a traditional logistics company, turned its eyes to convenience stores. The relationship between convenience stores and a comprehensive trading company was transformed into a new partnership which is based on e-commerce. Since the end of 1999, Network Enterprises constantly combined their business with that of convenience stores to compensate for inconvenience caused by low credit popularity and business discontinuity caused by the consignee being absent. Secondly, putting the digital sales terminals for music and games into convenience stores could increase the sales and meet the demands of customers, and also remove a customer's worries about online payment.

Japanese businessmen believe that a key problem of e-commerce is how to bridge the gap between imagination and reality, and convenience stores have the advantage to overcome this difficulty. Customers can choose delivery to the

nearest convenience store and pay as when buying in shops. Also, multimedia terminals set in convenience stores form an entrance to e-commerce. By combining realistic nets with electronic networks, the transactions provided by convenience stores are almost unlimited. In November 1999, Seven-Eleven's took the lead in providing a "collection on delivery" service, then taking advantage of the Internet and multimedia terminals in the store to sell products related to music, video, games content and online sales service. As the convenience stores became the focus of e-commerce, many existing commercial networks such as filling stations and professional corporate chains also began to explore the possibility of a network gateway. In 2001, Japan Post lengthened its business hours by 3 hours and had ATMs distributed in 37 main post offices operating all over the nation. To compete with a 24 hours a day service of POS in convenience stores, the post offices extended their opening hours to 24 hours a day soon after.

Japan owns some unique technological products and services such as the first color screen mobile phones in the world, phones that can take pictures and surf the Internet, the world's fastest servers, high-speed telecommunication services that can transmit a two-hours-long digital video within one second, a high-resolution LCD system in mobile phones and so on, thus guarding the leading position in the world.

2.4 China

2.4.1 Basic Situation of China

China, with a population of 1.335 billion and an area of 9,600,000 km², is a developing country. It was the second largest economy in the world with nominal GDP of U.S. \$5.75 trillion in 2010.

Since the reform and opening up started in 1978, the Chinese economy has maintained rapid growth. Now China is already a trade giant and becomes the second largest economy. The foreign trade volume was U.S. \$2.97 trillion in 2010^[15]. It shows that China has become a huge trading nation with certain competitiveness. But China highly depends too much on foreign trade and the domestic consumption is not sufficient enough to support sustained and rapid economic growth. In addition, the GDP per capita was just U.S. \$4,283 in 2010, ranking it 95th. In order to stimulate the domestic demand, the government has introduced a large number of policies such as heightening the threshold for individual income tax and "sending electronic appliances to the countryside". To fight the financial crisis, the government has taken various measures to reduce the negative impact that the financial crisis may bring such as economic contraction, high unemployment rate. In monetary policy, the government implemented a loose monetary policy such as buying and selling securities on the open market as a way of softening the blow. Since July 2008, the central bank has suspended the

three-year central bank bills and reduced the frequency of one-year and three-month central bank bills to lead the proper decline of the banknote discount rate and ensure liquidity. In addition, the prime rate and deposit reserve ratio declined three times relatively in September, October and November 2008, which aimed at increasing the money supply and expanding investment and consumption. Meanwhile the central bank was no longer applying hard constraints to the lending plans of commercial banks and encouraged the financial institutions to increase the loans for quake reconstruction, the “three rural issues”, small and medium enterprises (SMEs). In the international balance of payments, the government increased the export rebates and maintained the currency exchange to sustain the competition in exports. In fiscal policy, the government launched a plan of public spending with the amount of 4 trillion RMB to boost domestic demand. At the same time the government reduced the burden on enterprises through the adjustment of labor law-related measures and increased the expenditure in social security to maintain the stability of the socio-economic development environment. Through these active and effective measures above, China successfully achieved the often stated target of GDP growth of 8%, but negative effects of these measures, such as severe inflation, repetitive construction etc., have emerged.

Since the establishment of the People’s Republic of China in 1949, China has developed an independent and relative integrated industrial system and national economic system. China has abandoned traditional surpassing strategy which gives priority development to heavy industry and the labor-intensive industries have achieved great development since the reform and opening-up in 1979. Now the products of the textile and electronic appliance industries in China have occupied the world market. Although China has great advantage in traditional labor-intensive industries, the advantage is not sustainable. In addition, dozens of Chinese products exported to other countries have been subjected to antidumping proceedings. China has been involved in many anti-dumping investigations, the only country with so many investigations. According to WTO statistics, there were 73 cases of anti-dumping investigation and 10 cases of countervailing duty investigation against China in 2008, relatively accounting for 35% and 71% of the total number of the corresponding cases all over the world. Chinese enterprises have still been charged with dumping and failed to defend themselves effectively in 2009, especially in the tire industry. In contrast, the high-tech products are rarely charged with dumping and set quotas. Thus, it is a concern as to whether China can maintain rapid economic growth just relying on the traditional industries.

2.4.2 Background to Chinese E-Commerce Strategy

As a developing country, there are sufficient workers in China. Therefore China has a comparative advantage in the most labor-intensive industries such as food, clothing and housing. These traditional industries have a huge and stable demand.

So China can still depend on the development of labor-intensive industries. But the new economy is a key factor in future international competition. China cannot be unresponsive to the development of the new economy. The development of traditional industries focuses on current interest while the development of the new economy focuses on long-term interest. Developing both the traditional industry and new economy is the right strategy for China.

In fact, the new economy which takes the information industry as representative, will not hamper the development of traditional industries but will greatly promote its development. Just because of the strength of traditional industry, the U.S. economy did not suffer a hard landing at once after the new economic bubble burst. This is because the information industry just provides information services, but the major consumption is provided by the traditional industrial products such as clothing, food, housing and tourism. The relationship between the information industry and traditional industry is not absolutely contradictory but dialectically unified as they supplement each other. The luxury consumption of hi-tech millionaires needs to be satisfied by the production of traditional industries. Thus the rapid development of the new economy can promote the development of traditional industries from the aspect of demand. Meanwhile the information industry provides the services such as information collection, information storage and information processing which are needed by any industry. Information technology makes machine handling easier and takes less time than manual handling. Therefore information management based on computers can cut the management costs whether inside an enterprise or among the enterprises and improve the productivity of traditional industries. Any people or enterprise can connect with the others by the Internet with less cost. The development of the new economy with the information industry as representatives will expand the market of traditional industries, refine the division of labor and improve economic efficiency. Based on this understanding, China is facing challenges of informatization although China has not completed the task of industrialization.

From the historical point of view, industrialization is the basis of information and the information industry is developed in the process of industrialization. From the practical point of view, many developing countries achieved mixed progress with advanced technology and the experience of developed countries or, making use of the information industry, achieved a more advantageous position in the international division of labor. Thus the strategy of China is to persist in using information technology to propel industrialization which means accelerating the Chinese industrialization process, renovating conventional industries and speeding up the upgrading of products by information technology.

Informatization can allocate resources more efficiently and raise labor productivity. The Internet provides us a new platform for economic development and practical activities. Informatization is having a greater and more profound impact on economics, politics, military and cultural issues on a global scale, resulting in major changes in the economic development mode and economic system. Specifically, making use of information technology in the overall process

of manufacturing production can speed up the industrial restructuring which is more meaningfully than technical reform and equipment replacement. In return, it may promote innovation of information technology to broaden application fields and meet the growing demand for new technology and management mode in the process of industrialization. Therefore, using informatization to propel industrialization not only shortens the process of industrialization but also provides a broader application prospect for information technology.

The strategy of using informatization to propel industrialization is clearly shown in the *National Economic and Social Development Five-Year Plan of the People's Republic of China*. The specific contents include:

- Promote the industrial development and techniques reconstruction through micro-electronics, computer and network technology.
- Promote the reform of marketing, transportation and services through e-commerce, especially in e-business among enterprises.
- Increase product added value through the integration of information products and traditional products, and the wide application of information technology in new products.
- Speed up the informatization process of production technology and operating management.

During the 'Ten-Five' period, e-commerce in China has gone through continuous exploration and adjustment together with the development of informatization, and it had reached a certain scale by 2005. E-commerce has gradually permeated into all levels of the economy and society, and network management and consumption online has gradually formed. In 2005, the total amount of online procurement of commodities and services was 1.6889 trillion Yuan, accounting for about 8.5% of the total procurement. The total amount of online commodity sales and services was ¥909.5 billion RMB. Small and medium-sized enterprises (SMSs) are the main active practitioners. Meanwhile, the framework of e-commerce has developed to a certain degree. Electronic authentication, electronic payment, logistics and credit system are gradually being implemented. The local governments and industries are trying their best to speed up the development of e-commerce and the establishment of the platform. In addition, telecom operators, software providers etc., have been involved in e-commerce services. A number of new business models are emerging. However, there are still many problems such as a low level of informatization.

Therefore, the development of informatization, and high-technology industries are still a development priority in the *National Economic and Social Development Five-Year Plan of People's Republic of China*. In the *Eleventh Five-Year Plan*, a great deal of high-tech is put forward, for example, establishing a new generation of networks, including the China Next Generation Internet (CNGI), nationwide digital TV network and mobile communications demonstration network with independent intellectual property rights, developing the next-generation key network technology, key equipment and key software industry to establish the next-generation network infrastructure, developing the latest digital audio and video technology industry, developing the high performance computer system

whose calculation can reach petaflop speed and establishing the advanced computing platform based on grid computing. Meanwhile, the overall strategy put forward in the *Eleventh Five-Year Plan* is still to utilize informatization to propel industrialization and drive industrialization with informatization to improve social informatization. The specific contents include:

- Apply information technology to reconstruct traditional manufacturing industries, promoting the digitalization of production equipment, promoting the intelligence of the production process and realizing the informationization of business administration.

- Speed up the construction of a national information database to promote information-sharing.

- Optimize the structure of information resources and improve the broadband communication network to heighten the broadband Internet speed.

- Construct the digital TV network which can transmit digital flows through cables, terrestrials and satellites.

- Build the next generation Internet and speed up its commercial application.

- Develop and refine the network standards to promote interoperability and resource sharing.

- Strengthen safety monitoring, emergency response, key management and other information security infrastructure to ensure the security of information systems.

- Improve risk assessment and security access systems.

Now China will soon face the *Twentieth Five-Year Plan*. Chinese informatization construction is entering a deeper and more solid stage. But there are still many problems such as unbalanced development between districts, a low level of informatization, inadequate infrastructure, an inadequate information environment, lack of professionals etc. During the ‘Twentieth Five-Year Plan’, China will adhere to the integration of industrialization and informatization and promote the informatization process based on the three following aspects: the key industrialization project, extensive application and core-technologies development.

From now on, Chinese informatization strategy targets are:

- Information infrastructure will be basically popularized.
- The capability of independent innovation in information technology will be significantly enhanced.

- Industrial structure will be fully optimized.

- National information security will be highly improved.

- National economic and social informatization should achieve remarkable achievements.

- The institutional environment and policy system for national information development will be basically completed.

- The national capacity of information application should be highly improved.

2.4.3 *Orientation of Chinese E-Commerce Strategy*

Chinese e-commerce strategy is very practical. It is determined by China's economic development level and the development level of science and technology. Although China has been the world's third largest economy, its GDP per capita still ranked lower than 96th in 2009, in the bottom half of the list even in developing countries. China's scientific and technological development is also not satisfactory, falling behind the United States, Europe, Japan and even India. Therefore the orientation of Chinese e-commerce strategy can only be based on the reality. Now e-commerce technology is mainly used to promote industrial restructuring from extensive to intensive and improve the efficiency and quality of the national economy to achieve a comprehensive, coordinated and sustainable economic and social development.

2.4.4 *Details of Chinese E-Commerce Strategy*

China started to study an e-commerce development plan in 1999, which was originally expected to be promulgated by the State Council in 2000 but not disclosed without any certain explanation. In January 2005, the State Council formally announced the *State Council views on Accelerating the Development of E-business*, when Chinese e-commerce development strategy was basically formed. On June 1, 2007, the National Development and Reform Commission and the State Council Information Office jointly issued China's first e-commerce development plan, the *Eleventh Five-Year Plan of e-commerce*, firstly establishing e-commerce strategy and mission at the national policy level. On December 17, 2007, the Ministry of Commerce announced the *Opinions of the Ministry of Commerce on Enhancing the Regularized Development of Electronic Commerce*.

Here, we just briefly summarize Chinese e-commerce strategy as follows:

The target

- Promote industrial restructuring;
- Promote economic growth mode transformation from extensive to intensive;
- Improve the efficiency and quality of the national economy and form a new driving force for national economic development;
- Respond to challenges of economic globalization, seize the development initiative, improve international competitiveness and enhance the capability of allocating resources on a global scale to enhance its international status;
- Eliminate the constraints on fair competition, reduce transaction costs and promote the formation and improvement of a national unified market to optimize allocation of resources.

The guiding ideology

- Integrate government promotion and business-led development

Improve the management system, optimize the policy environment, strengthen the infrastructure construction and improve the service quality, fully play the main role of enterprises and form a positive interaction mechanism between the government and enterprises to promote coordinated development of e-commerce and e-government.

- Integrate a proper environment and widen the applications

Strengthen the construction of supporting systems such as policies and regulations, credit services, security certification, standards, online payment and modern logistics. Create a favorable environment for the development of e-commerce to promote e-commerce application in all fields.

- Integrate the network economy and the real economy

E-commerce serves as the realized pattern to combine the network economy and the real economy. Make use of technological innovation to promote management innovation and system innovation, and transform traditional business processes and the operation mode from extensive to intensive.

- Integrate prioritized development with coordinated development

Conduct pilot projects to solve key problems and key links in the e-commerce development process, promote e-commerce applications in key areas of the national economy and explore a multi-level and multi-mode e-commerce development mode with Chinese characteristics to promote the coordinated development of various types of e-commerce applications.

- Integrate the accelerating development with strengthening the management

While vigorously promoting e-commerce applications, establish a management system conducive to the development of e-commerce and strengthen market supervision in the Internet environment, regulate online transactions and ensure information security to maintain the normal role of e-commerce activities.

The content

- Improve the policies and legal environment

The purpose is to standardize the development of e-commerce. The principal measures are:

- i. Strengthen overall planning and coordination. Make the objectives clear in the tasks and priorities of e-commerce development. Establish the security system and working mechanism with mutual cooperation and close coordination.

- ii. Strengthen the construction of e-commerce laws and regulations. Carry out the *Electronic Signature Law of the People's Republic of China*. Implement the relative laws and regulations on electronic transactions, credit management, security authentication, online payment, taxation, market access, privacy protection, information resource management and so on.

- iii. Formulate fiscal and tax policies to promote the development of e-commerce. Strengthen e-commerce tax management; formulate proper preferential policy, increase the support dynamics in the basic and key areas of e-commerce; support enterprises to sale and procure online in the international market and promote enterprises to participate in international market competition. Government procurement should actively adopt e-commerce mode.

iv. Consummate a financing mechanism of e-commerce. Establish a diversified investment and financing mechanism and formulate the relative policies to coordinate the development of financial sectors and e-commerce enterprises. Increase the investment in e-commerce to encourage the enthusiasm of society and enterprises.

● Speed up the construction of a credit system, certification system, standards, e-payment system and modern logistics system.

The purpose is to establish a supporting system for the development of e-commerce. The principal measures are:

i. Speed up the construction of a credit system. Strengthen government regulation, industrial discipline and interdepartmental coordination and integration. Encourage enterprises to develop e-commerce. Establish scientific, rational, authoritative and impartial credit service organizations. Establish a related mechanism to share credit information and gradually form an online credit information service platform which can achieve dynamic credit data collection, processing and exchange. Establish a feasible mechanism penalizing bad credit and a credit monitoring system to gradually form a credit service system that conforms to China's national conditions and international standards.

ii. Establish and improve the security certification system. In accordance with relevant laws and regulations, develop an e-commerce security certification management method to further standardize the management of a secret key, certifying and certification authority. Emphasize the establishment of a responsible system. Develop the encryption and authentication technology with independent intellectual property. Improve the security certification infrastructure, establish a reasonable security certification system and realize alternate attestation in industries and districts.

iii. Establish and improve national standards of e-commerce. Raise awareness of the standardization, fully mobilize the enthusiasm of various sectors to establish and improve national standards of e-commerce. Encourage enterprises as the mainstay, with universities and research institutes, together to set the standard for key technology and specifications and participate in international standard setting to actively promote e-commerce standardization.

iv. Promote the construction of an online payment system. Draw up online payment standards and technical standards, research risk prevention measures and strengthen supervision and risk control. Actively study relative regulations for third-party payment. Guide commercial banks and China Unionpay (CUP) to establish a secure, fast and convenient online payment platform and vigorously popularize bank cards, online banking and other online payment tools. Further improve the online settlement system to promote the standardization of online payment and integrate it into international practice.

v. Develop a modern logistics system. Fully make use of railway, highway, civil aviation, postal services, warehousing, commercial networks and other logistics resources to improve the logistics infrastructure. Make use of advanced logistics technology and equipment to optimize business processes and enhance the informatization of the logistics industry. Vigorously develop third-party

logistics to effectively support the wider use of e-commerce.

- Promote enterprises to play an important role in the development of e-commerce

Enterprises are the principal actors for developing e-commerce. The principal measures are:

- i. Promote information construction in enterprises. Enterprise informatization is the foundation of e-commerce. To promote the development of e-commerce we must continuously optimize business processes and organizational structures, optimize the resource collocation, improve the abilities of market-response and increase economic benefits.

- ii. Focus on promoting e-commerce applications in backbone enterprises. The backbone enterprises should play the leading role in the procurement and sales. Integrate upstream and downstream resources to achieve the integration of the business process among enterprises and interconnections among information systems.

- iii. Promote e-commerce applications. Formulate the e-commerce norms in different industries, conduct pilot projects in key industries, promote the e-commerce experiences with industrial characteristics, explore the mode of e-commerce development and establish the mechanism of information sharing and exchange among industries to promote competition and cooperation in industries.

- iv. Support e-commerce applications in SMEs. Raise the SMEs' awareness of the importance of e-commerce, support the construction of a third-party e-commerce service platform for small and medium size enterprises to solve problems in investment and human resources and reduce transaction costs.

- v. Promote consumer-oriented e-commerce applications. Develop a new consumer-oriented e-commerce model and new services, establish and perfect the credit mechanism for online transaction, expand the scale of C2C and B2C businesses, the scale of consumers e-commerce applications. The application and development of mobile e-commerce also need to be paid more attention.

- Improve the technology and service quality of e-commerce

The purpose is to promote the development of relative industries. The principal measures are:

- i. Develop the hardware and software related to e-commerce. Actively introduce, digest and absorb foreign advanced technologies for e-commerce, encourage technological innovation, speed up the industrialization process of the hardware and software related to e-commerce with independent intellectual property rights and improve the independently developing capability of the e-commerce platform, application software, terminal equipment and other key products.

- ii. Promote the construction of an e-commerce service system. Fully utilize existing resources, give full play to intermediary organizations; strengthen the construction of high-level networking, provide services such as engineering research, technological achievement transformation, consulting services and project supervision and gradually establish an evaluation system to promote the

healthy development of e-commerce.

- Improve the technology and service quality of e-commerce

The purpose is to improve awareness and apply e-commerce to enterprises and citizens. The principal measures are:

- i. Increase the scope of propaganda. Fully utilize different kinds of media and various forms to enhance the promotion of e-commerce and security education. Strengthen morality education, raising community awareness to the importance of developing e-commerce and enhancing the awareness of e-commerce applications and information security of enterprises and citizens.

- ii. Strengthen e-commerce education and theoretical research. Higher research institutions and educational institutions should further improve the development of subjects relative to e-commerce and cultivate all kinds of technical professionals and inter-disciplinary talent. Improve the existing training and educational institutions, and strengthen continuing education and on-the-job training through a variety of channels.

- Strengthen cooperation and take part in international competition

The purpose is to improve the development of e-commerce, making use of the international and domestic market. The principal measures are:

- i. Strengthen international exchanges and cooperation. Actively enter international organizations of e-commerce and participate in the forming of international rules, treaties and model laws of e-commerce. Closely track the international development and trends of e-commerce. Strengthen technical cooperation and promote market integration to improve e-commerce in China.

- ii. Actively participate in international competition. Enterprises should strengthen the sense of international competition, actively explore the international market, and make use of e-commerce to enhance international competitiveness. Relevant departments should raise service consciousness, enhance service standards and give play to the advantage of information resources to provide timely and accurate information and quality services for enterprises in international competition.

The obstacles

- Tariffs and taxes

Although the traditional tariff and tax system in China is satisfactory to some extent, it is usually used in traditional transactions. For online transactions, it is impossible to adopt traditional tariff and tax systems for e-commerce. It is necessary to find a suitable solution as soon as possible.

- Electronic payment and foreign exchange

E-commerce is different from traditional commerce. The traditional management mode of payment and foreign exchange is not applicable to e-commerce. It is also necessary to learn from successful foreign experience to create a convenient, secure and effective payment instrument and settlement system. In addition, formulating the relative laws and regulations is greatly needed. For international e-commerce, cross-border settlement and foreign exchange management should be properly solved.

- National economic security

National economic security stands in the first place. It means to strictly observe the *National Security Law* and the related policies. Therefore, it is necessary to make use of proper technology and equipment to ensure the safe operation of information systems and networks and take effective security authentication technology to ensure the integrity, confidentiality, effectiveness and anti-denial of electronic data.

- Strengthen the information infrastructure

Since the mid-1990s, China has been emphasizing information infrastructure and achieved notable results. The infrastructures such as the database, information transmission system, information processing system and software environment have greatly improved. However, they cannot always adapt to the rapid development of e-commerce. We must further strengthen the construction of the information infrastructure to ensure fair and reasonable access. Lower operation costs and better service are necessary.

- Pay attention to demonstration projects and promote them steadily

The informatization level of various regions in China differs significantly. The consciousness of e-commerce is very inconsistent too. Therefore, we should choose some key regions, industries and enterprises as pilot projects. Sum up the experience in information infrastructure, payment authentication and relevant policies and regulations and promote it steadily. China's eastern coastal region is of strong overall strength. Shenzhen, Guangdong, Shandong, Shanghai, Beijing and Tianjin were selected to execute the pilot projects. In those cities, the development of e-commerce has taken the first step, and their successful experience should be followed in other provinces or cities. For those industries and enterprises committed to the development of e-commerce, they can select the industries with a proper environment in the aspects of logistics, payment, credit, as the breakthrough.

- Personnel training

The key factor in e-commerce is professionals. They are very important for the development of e-commerce and the application of e-commerce. Without abundant e-commerce professionals, it is impossible to popularize e-commerce, let alone gain the international competitive advantages. It is the most urgent task to cultivate a large numbers of professionals proficient in computing, economics and foreign languages.

2.4.5 Effect of Chinese E-Commerce Strategy

Although systemized e-commerce strategy in China was put in place by 2005, it was early in 1997 when China first tried to develop e-commerce. By 2009, there had been 12 years since e-commerce emerged in China. In the past 13 years, e-commerce has developed rapidly.

By June, 2009, there was 338 million netizens in China. For the past 13 years,

as the closest connected business with the manufacturing area, the circulation of the national economy and service industries, e-commerce had not only developed itself to be a large industry, but has also facilitated the transformation and upgrade of the manufacturing industry, and the service industry of the national economy to a great extent. There were 12,282 e-commerce websites of a certain scale in China by June, 2009, among which the number of B2B e-commerce service companies was 5,320 (Fig. 2.7) while the number of B2C, C2C and other non-mainstream companies was 6,962 (Fig. 2.8). The figure below described the increase in e-commerce service companies between 1997 and 2009. It could be found in the figures that from 2002 to 2009 B2B e-commerce websites in domestic industries increased substantially and rapidly. In particular B2C, the C2C category and e-commerce websites of other patterns developed rapidly in 2004 and 2008 respectively, which had a close relationship with the awareness of netizens to shop online after the ‘SARS period’ and the idea of shopping online to reduce costs in the financial crisis^[12].

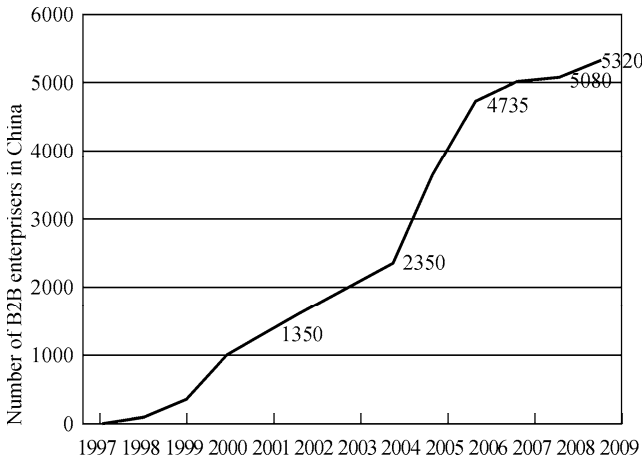


Fig. 2.7 Number of B2B enterprisers in China from 1997 to 2009 (Source: B2B.toocle.com)

E-commerce companies in China are mainly located in the Yangtze River Delta area, Zhujiang Delta area, Beijing and other developed provinces and cities. According to B2B.toocle.com (Fig. 2.7), the Yangtze River Delta area accounted for 33.52%, the Zhujiang Delta area accounted for 32.04%, and Beijing for 8.86% by June, 2009. Hangzhou City in the Yangtze River Delta area is acknowledged as the ‘e-commerce City of China’. Most of these places have a well developed economy, huge government support, which forms a good matching industrial environment for the development of e-commerce.

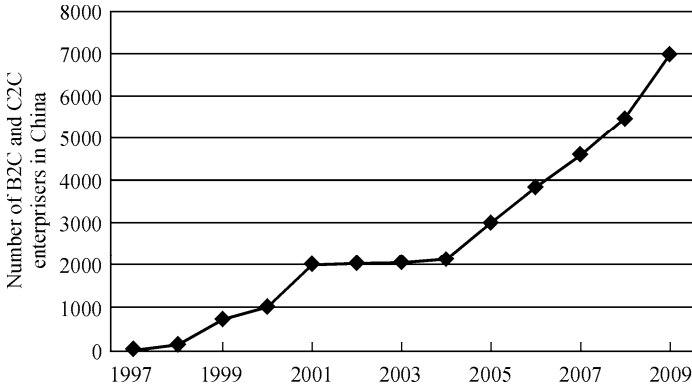


Fig. 2.8 Number of B2C and C2C enterprises in China from 1997 to 2009
(Source: B2B.toocle.com)

E-commerce firms are mainly located in the industries closely related to our daily life such as the textile and clothing industry, the digital and home appliance industry. The two accounted for 14.32% and 10.35% in the whole industrial distribution of e-commerce firms respectively while iron and steel machinery, chemicals and pharmaceuticals, building materials, agriculture and forestry, ironware, package printing, food, candy and wine, gift items, and other industries accounted for 8.3%, 6.35%, 6.2%, 5.89%, 4.53%, 5.42%, 4.3%, 3.69%, 30.65% respectively^[16]. Meanwhile, the revenue of e-commerce firms has increased dramatically. By June, 2009, the accumulative revenue of e-commerce service firms (including B2B, B2C, C2C, B2M, B2G) in the first half year of 2009 was 7.53 billion RMB. Revenues of the two most important parts—B2B and B2C were 3.25 billion and 4.02 billion RMB respectively. Fig. 2.9 described the increase in accumulative revenue of e-commerce service firms in China between 1997 and 2009.

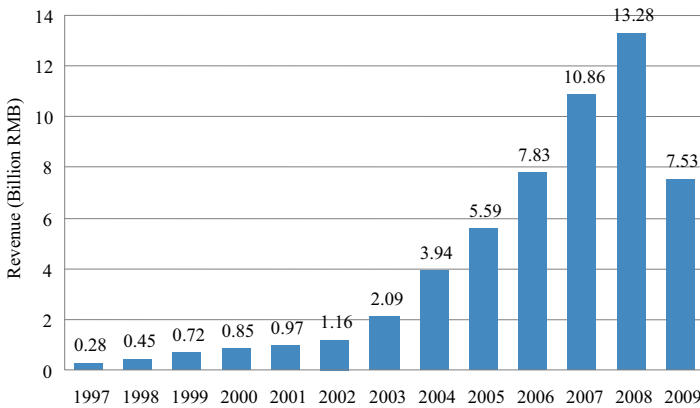


Fig. 2.9 1997 – 2009: Revenue growth of e-commerce enterprises in China (billion RMB)
(Source: B2B.toocle.com)

With the development of e-commerce, the number of employees in e-commerce also increases fast. There were 0.5 million people directly involved with e-commerce services in China by June, 2009^[17]. Besides, e-commerce has promoted the development in the areas of network basic services, warehouse logistics, payment channels, network marketing, network advertisements and other extended industries or Internet areas. Those employees indirectly driven by e-commerce were more than 6 million.

From the above we can see that e-commerce in China itself has developed to a certain level. There are high-speed developments in the number of companies or employees. Just see the clients and trade in e-commerce. By June 2009, the number of domestic medium-sized and small enterprises clients of a third-party e-commerce platform had exceeded 10 million and the scale of China online shopping clients had also exceeded 100 million RMB. According to iResearch (Fig. 2.10), the trade volume of China e-commerce market had reached 2.9 trillion RMB in 2008 and 3.6 trillion RMB in 2009. In addition, iResearch estimated that the e-commerce market of China would continue to develop with a fast growth rate of more than 30%. It was expected that the trade volume of China's e-commerce market would reach 12.7 trillion RMB in 2013^[5].

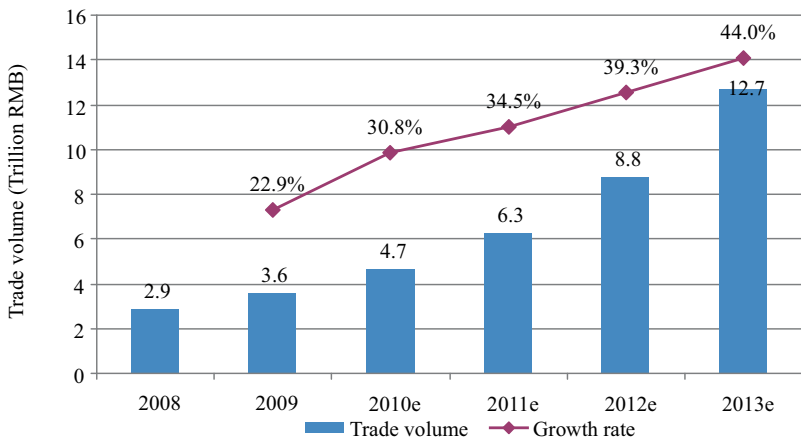


Fig. 2.10 Trade volume of e-commerce in China from 2008 to 2013
(Source: iResearch)

China has also made achievements in the aspect of the cultivation of e-commerce talents. There are 275 universities and colleges, and nearly 700 higher vocational schools which have established undergraduate majors in e-commerce. Among them, fifty-one '211' universities inaugurated graduate programs of e-commerce including Zhejiang University, Nanjing University, Wuhan University, Huazhong University of Science and Technology, Sichuan University and other famous universities^[18]. By October, 2006, the number of students the universities had recruited accumulatively was 30,021, the number of undergraduates was 5,891,737 per year on average. Junior colleges had recruited 24,130 students,

3,016 per year on average^[19]. There are also many e-commerce expert committees established in China such as Mobile e-commerce Committee, e-commerce Expert Committee of Chinese Institute of Electronics, Chinese Institute of e-commerce. China has upgraded the subject of logistics related to e-commerce to a first level discipline. In addition, the government is actively considering upgrading e-commerce to a first level discipline too.

In the high-speed development progress of e-commerce, the Chinese government has also put in place a great deal of policies to protect and guide the development of e-commerce. For example, in 2005, the People's Bank of China established the *Electronic Payment Guidelines (No.1)* which comprehensively specified rules, security, technical measures, and responsibilities in electronic payment. Afterwards, the Department of Commerce also established the *Suggestion of Department of Commerce on Development of e-commerce* to regulate the development of e-commerce.

But the development scale of China's e-commerce still has a lot of problems compared with Europe, America and Republic of Korea and other countries whose Internet popularization is much higher. For example, the proportion of online shopping is relatively low, the proportion of online payments is relatively low, development among regions is unbalanced, laws and regulations of e-commerce are imperfect, the e-commerce security system is not sound, and all of them need further resolution.

Those issues will be solved in further development of e-commerce in China. Now e-commerce is under rapid development in China and the trade volume will continue to grow in the next three or five years. In the development, the potential of central and western regions in China should not be ignored. In addition, services Chinese e-commerce enterprises provide are not only simple online queries and online transactions but also the integration of sales channels, corporate branding, marketing and other aspects. The value of the Internet should be utilized more and deeper. Moreover, terminals for e-commerce are becoming diversified. Besides online shopping, TV shopping and mobile shopping is becoming more and more popular. It is a trend that Internet business combines with mobile commerce.

2.5 Australia

2.5.1 Basic Condition of Australia

Australia is a highly developed country. Australia is the thirteenth largest national economy in the world with a GDP of over U.S. \$1.2 trillion in 2010 by the international exchange rate and the 18th largest measured by PPP adjusted GDP. Its per capita GDP is slightly higher than that of the United States, United Kingdom, Germany, and France. It ranks the third in the Index of Economic

Freedom in 2010. Australia also ranks the 21st largest importer and 23rd largest exporter. Australia is a member of the APEC, G20, OECD and WTO organizations. It has free trade agreements with ASEAN, Chile, New Zealand, Singapore, Thailand, and the United States.

Australia is a resource-rich country with abundant minerals, coal, natural gas, uranium ore, lead and aluminum, gold, diamonds, iron ore, uranium and so on. Australia is a major exporter of agricultural products, particularly wheat, wool; minerals such as iron-ore and gold, and energy in the forms of liquidized natural gas and coal. Although the agricultural and natural resources constitute only 3% and 5% of GDP respectively, they contribute substantially to export performance, accounting for 57% of the total export. The Australian economy is dominated by its service sectors, including tourism, education, and financial services, accounting for 68% of Australian GDP.

2.5.2 E-Commerce Background of Australia

Australia is one of the earliest countries that used the term “information economy” or “knowledge economy”. Its national strategy for knowledge or the information economy has been always widely advocated in the international community. At the end of the 20th century, with economic globalization and the revolution in information and communication technologies, the Australian government realized that, in the 21st century, Australia’s wealth, international competitiveness, national security system, social cohesion and culture would be deeply affected by the development of the nation, the ability to use intellectual capital and the control of information and communication technology. As early as 1997, the Australian government began to use the concept of the “information economy” to describe the “the transformation of economic and social activities caused by information and communication technology”, and defined the “information economy” as “the economy in which information, knowledge and education are the main inputs of commercial and social activities”. The aim of the Australia information economy is, “the government, business organizations and the community should be fully connected and cooperate with each other to achieve the maximum economic and social benefits.”

The ICT (Information and Communication Technology) industry always obtains the support of the Australian Federal Government. Australia has set up a special office-National Office for information economy, subordinated to the DBCDE (Department of Broadband, Communications and the Digital Economy, the primary replacement for the former Department of Communications, Information Technology and the Arts (DCITA) disbanded in 2007 with the election of the Rudd Government), which is responsible for formulating strategies, providing suggestions for the federal government and congress on the development of information and communication technology. The federal government, the state governments and local governments formulate specific

development strategies. The Australian government has promulgated a number of related policies.

In 1998, the Government first promulgated the Strategic framework for information economy. In July, 2004, the Australian government updated and issued *Australia's Strategic Framework for the Information Economy 2004-2006: Opportunities and Challenges for the Information Age* (referred as Opportunities and Challenges below). The *Opportunities and Challenges* analyzed opportunities and challenges brought by the information economy in detail, and proposed specific information economy strategies and relevant specific measures. The Australian information economy strategies can be simply summarized: to establish highly developed and reliable information infrastructure; to establish a more secure environment; to establish a strong national innovation system and to establish a highly efficient and effective system of government service system.

According to Australian informationization strategy, the Australian government has taken many effective measures in the construction of network, sector infrastructure and network security which provided a good foundation for the development of electronic commerce in Australia. In order to meet the different demands for a network by different people in different strata and different areas, especially the socially vulnerable groups and marginalized people, the Australian Government provided 1.8 billion Australian dollars for consolidating the communication network in different areas. Now, Australia has a world-class network communication system. The Internet access rate of enterprises and families is always among the best in the world. According to 2004 Global Digital learning readiness rankings in the Economist, Australia was in the forefront, which makes Australia have a good environment to develop e-commerce (ranked 12th among 64 countries). Meanwhile, Australia took the freight transportation industry and the health-care industry as a priority, establishing an online service project. An e-business guide website (www.e-businessguide.gov.au) was established to help small and medium-sized enterprises get better online information, and to achieve the maximum benefits of electronic business. In terms of network security, the Australian government set up a specialized agency and enacted numerous laws to make online transactions secure. In 1999, Australia enacted the Electronic Transactions Act, allowing individuals to make deals with government departments and agencies electronically, and defining the general principles by which people would sign contracts through electronic means. It removed the legal obstacles to using all kinds of electronic transactions. Moreover, the Australia government provided more facilities for the application of e-commerce in Australia to encourage private and public sectors to use authentication technology. The Australian National Office for the information economy formulated a "cross-recognition" policy to encourage the interflow of the public key infrastructure domestically and internationally. Meanwhile, Australia also promulgated the *Privacy Act*, *Spam Law*, *Interactive Gambling Act* to ensure online transaction security and legality.

2.5.3 Orientation of Australian E-Commerce Strategy

The Australian Government recognized the importance of information technology in the early 21st century, and has been promoting the development of the information economy in Australia actively. The aim was set as “the government, business organizations and the communities are fully connected and cooperate with each other to achieve the maximum of economic and social benefits.” And e-commerce was one of the most important measures. But the Australian Government thought that the specific activities of e-commerce should rely on the promotion of the private sector. The Australian Government was primarily responsible for eliminating obstacles to develop e-commerce. The development of e-commerce in Australia mainly relied on the private sector. The specific measures of e-commerce were mainly carried out by the enterprises.

2.5.4 Contents of Australian E-Commerce Strategy

Australia’s administrative system consists of federal, state and municipal governments. As far as the development of e-commerce, the federal government is responsible for the deployment and the planning, while the practical measures are taken by the local governments. In the federal government’s point of view, the federal government is mainly to formulate relevant laws and regulations and policies in order to regulate the conduct of e-commerce. The federal government mainly invests in the national education system and information security through the tax and so on. Meanwhile, some specific application projects such as the construction of E-government, e-commerce, the digital community, are arranged by the state and local governments according to the requirement of the federal government’s information economy development framework in order to improve the competitiveness of each state and local governments.

The contents of Australian e-commerce strategy can be summarized as follows:

(1) To perfect the related infrastructure

Australia’s investment in infrastructure is mainly to achieve full network coverage, especially in the rural areas. Since 2000, the federal government has invested more than 70 million Australian dollars within 5 years, to support the development of a rural network and network services. Within 5 years, 45 million Australian dollars were appropriated by local governments for them to provide online information for the public. Within three years, 10 million Australian dollars were invested in the rural areas for providing online government services. Within 3 years, 36 million Australian dollars were invested to open more websites in the countryside. Moreover, 20 million Australian dollars were allocated to develop the Block Island’s telecommunications infrastructure so that residents would obtain a cheaper Internet service.

(2) To establish Australian e-commerce network and encourage SMEs to use

e-commerce

Australian Electronic Business Network is funded by the federal government, and the state governments have also participated in its establishment. It is a non-profit organization, which aims at encouraging SMEs to use e-commerce, providing e-commerce knowledge training, business management training and internet-based online service for SMEs. The services provided by this network include: e-commerce training programs, the publications on the use of e-commerce for SMEs, e-commerce transaction systems and programs for demonstrating and testing, the cooperation with the Australian Trade Commission to improve export competitiveness. At the same time the Australian government would provide seed money to fund enterprises to develop e-commerce projects. The projects accepting the imbursement from the Government have covered a wide range of industries, especially the application of B2B e-commerce.

(3) To establish and perfect the relevant laws

In 1999, the Australia enacted the *Electronic Transactions Act*, allowing individuals to make deals with the government departments and agencies by electronic ways and making the general principle explicit by which people could sign contracts through electronic means. The *Electronic Transactions Act* on the basis of *The United Nations Commission on International Trade Law Model Law on e-commerce* removed the legal obstacles to using all kinds of electronic transactions and successfully promoted the implementation of e-commerce in Australia. Furthermore, each state made similar laws in its area of jurisdiction, which complemented the *Electronic Transactions Act*. In the meantime, the Australian National Office for the information economy formulated a “cross-recognition” policy to encourage the interflow of public key infrastructure within domestic and international scope. Australia also promulgated the *Privacy Act*, *Interactive Gambling Act*, and *Spam Law* and so on, concerning the protection of personal privacy on the Internet and online data. Besides, Australia raised many key points mainly involved in consumer interests in electronic transactions, the tariffs of e-commerce products, electronic authentication and relevant laws to promote the development of cross-border e-commerce.

(4) To popularize the knowledge of e-commerce and develop e-commerce market

The Australian Government held seminars in various places to spread the application of e-commerce technology in enterprises and the implementation of e-commerce in remote areas. At the same time, Australia implemented “online Australia” activities. In the activities, the Australian National Office for the information economy with industrial organizations and other governmental agencies chose a subject each month and held a series of national activities such as conferences, exhibitions, technology demonstrations, publications, lectures and so on, to encourage enterprises and governmental departments at all levels to participate in the discussion on the Internet economy and e-commerce. The Australian Government also proposed best practice models (BPM) for e-commerce to protect the consumer interests in the domain of e-commerce. In addition, the Australian government issued a guide manual on e-commerce to help

SMEs to launch e-commerce.

(5) To promote the development of network security technology, and popularize the knowledge of network security

Australia has established the Information Infrastructure Protection Group. Australia has set up the Infrastructure Assurance Advisory Council, Critical Infrastructure Advisory Council and three IT Expert Advisory Groups — IT Security Expert Advisory Group, Critical Infrastructure Protection Future Group and the Security Environment Building Experts Group about the aspects of information safety since 2003. Meanwhile the Australian Government established an Australian High-Tech Crime Centre and the National Authentication Framework. With the network being more and more popular, the Australian government not only improved the technology of network security, but also improved the security of e-commerce by popularizing the knowledge about network security among the public. In 2010, the Australian government proposed the “National Network Security Week” with the purpose to improve people’s awareness of network security, presenting how to protect personal information through some examples about protecting personal online information.

2.5.5 Effects of Australian E-Commerce Strategy

The implementation of specific measures above not only has made Australia’s information industry develop rapidly, but also contributed to the rapid development of e-commerce in Australia.

● Connectivity

Many Australians now have access to the Internet in their home and at work. In June 2010, 77% of the population aged 14 years and over had access to the Internet at home, 40% at work and 15% at other locations. Sixty-six percent of persons aged 14 years and over had access to home broadband services, up from 63% in June 2009. Meanwhile, mobile networks are playing a more and more important role in people’s daily life. Thirteen percent (about 2.4 million persons) of the population in Australia aged 14 years and over were estimated to have undertaken some form of activity online via their mobile phones during June 2010, up from 9% (1.6 million persons) in June, 2009. There were 3.5 million mobile wireless broadband subscribers in Australia, up from 2.8 million in June 2009 while the number of fixed broadband subscribers remained steady^[16]. Therefore, mobile networks are changing the dynamics of Internet use and at the same time influencing the development of e-commerce.

● Consumer engagement in e-commerce

The majority of Australians have engaged in a wide range of e-commerce activities online. According to a survey by the Australian Communications and Media Authority (ACMA), there were 88% of household Internet users who had performed one or more e-commerce activity during June and November 2009. A wide range of e-commerce activities had been adopted by Australians such as

banking transactions online, paying bills online, selling products or services online, purchasing products or services online, getting government services online and gambling online. Among them, banking transactions, purchasing products or services and paying bills online were the most popular e-commerce activities (Fig. 2.11). In the survey, 26% of Internet users performed between one and three activities while 43% between four and six e-commerce activities, and 18% between seven and nine activities. About 1% indicated they had performed more than ten kinds of e-commerce activities. It can be seen nearly two-thirds of respondents undertook at least four different kinds of e-commerce activities. Meanwhile the age, gender, household income, level of education and employment all had an effect on people's adoption of e-commerce activities. In general, young consumers with high levels of education and income are more likely to adopt e-commerce. Consumers between 25 and 34 in Australia were the main group across age groups. In addition, the higher the levels of education and income, the more likely it is for consumers to engage in e-commerce. Moreover, males (74%) were more likely than females (65%) to purchase online. But they purchased different goods. Males preferred to purchasing household goods including furniture, electronic appliances or computers while females preferred to purchasing health and beauty products.

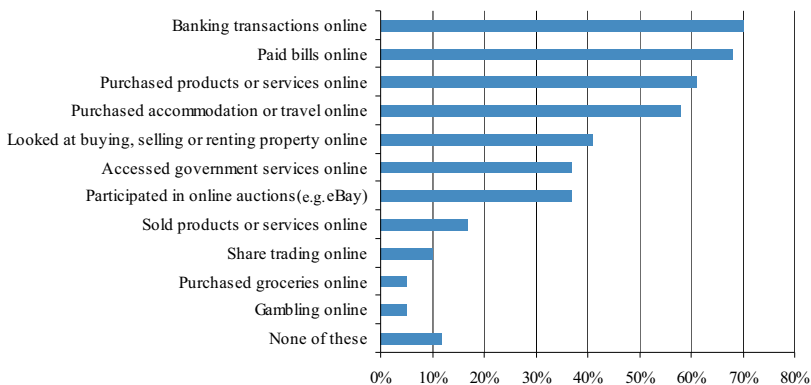


Fig. 2.11 Adoption of e-commerce by household Internet users during June and Nov., 2009
(Note: multiple responses allowed)

As far as goods and services purchased online are concerned, the most popular items were goods and services, accounting for 56%. 43% of respondents purchased entertainment events, concerts and movie tickets online because of the convenience and low cost. In addition, household goods, books and magazines were also popular goods purchased online. Over a third of respondents chose to purchase them online. E-government services were one of the popular services online too ^[17]. Details are shown in Fig. 2.12 ^[18]. According to the Australian Bureau of Statistics, the value of Australian business Internet orders was estimated to be Australian \$123 billion in the 12 months over 2008 – 2009, up from Australian \$81 billion in 2007 – 2008. The two most important factors as to why

so many people purchased online were the convenience and low cost of e-commerce. In addition, e-commerce made it possible for consumers to purchase goods or services overseas, which was more convenient than shopping abroad.

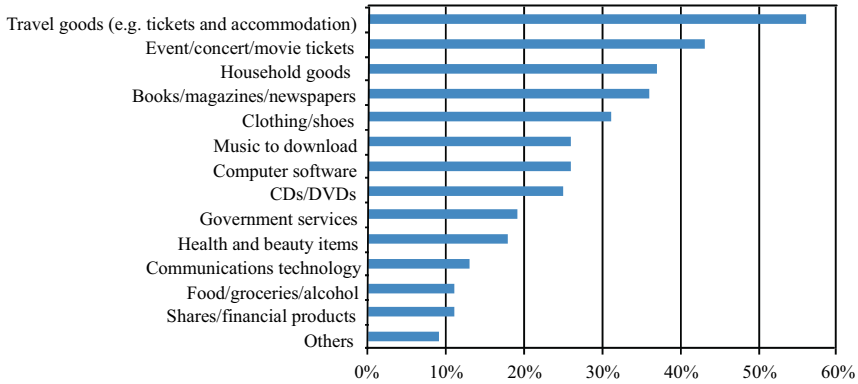


Fig. 2.12 Goods and services purchased online during June and Nov., 2009
(Note: multiple responses allowed)

● Small and medium enterprises engagement in e-commerce

Small and medium size enterprises are the main participants in the development of e-commerce. Nearly all the small and medium size enterprises (SMEs) in Australia have owned a computer of some description. About 94% of SMEs had access to the Internet in September, 2010. As for websites of their own, 60% of small businesses had their own websites in 2010, up from 54% in 2009. Website penetration also rose for medium size businesses. About 89% of medium size businesses had their own websites in 2010, up from 85% in 2009.

With the development of e-commerce, more and more SMEs use the Internet for procurement. In 2001, SMEs used the Internet mainly for looking for information on products or services. Recently, more and more SMEs used the Internet for placing orders for products or services, and paying for products or services. In addition, medium size businesses adopted e-commerce better, compared with small businesses. In 2010, 79% of medium size businesses placed orders online and 81% of medium size businesses paid for products or services online while only 73% of small businesses placed orders online and 76% of medium size businesses paid for products or services online (Table 2.3). The most common online purchases made by SMEs were airline bookings, accommodation, software, and stock and merchandise.

With the development of e-commerce, online selling grows rapidly, whether in taking orders or receiving payments. In 2001, less than 40% of medium size businesses had ever sold products or services online while less than 20% of small businesses had ever sold products or services online. In addition, the growth in medium size businesses selling online was stronger than that in small businesses. The percentage of medium size businesses taking orders online rose from 56% in

2009 to 66% in 2010, with those taking payments rising from 70% in 2009 to 75% in 2010. For small businesses, the percentage of those taking orders online rose only from 57% in 2009 to 58% in 2010, with those taking payments rising from 67% in 2009 to 70% in 2010 (Table 2.4). Compared ^[19] with taking orders online, SMEs have made greater achievements in receiving payments online.

Table 2.3 Buying over the Internet of SMEs

Year	Small businesses				Medium size businesses			
	Look for information on products or services	Place orders for products or services	Pay for products or services	Access to the Internet	Look for information on products or services	Place orders for products or services	Pay for products or services	Access to the Internet
2001	51%	26%	23%	75%	79%	49%	39%	95%
2002	64%	41%	40%	79%	82%	61%	39%	94%
2003	67%	45%	47%	81%	91%	64%	66%	98%
2004	75%	55%	58%	86%	94%	74%	73%	99%
2005	76%	51%	62%	87%	92%	72%	72%	97%
2006	82%	60%	65%	90%	93%	75%	80%	99%
2007	78%	58%	66%	92%	93%	72%	77%	99%
2008	82%	66%	70%	93%	96%	82%	81%	98%
2009	87%	74%	74%	95%	94%	84%	79%	98%
2010	86%	73%	76%	94%	94%	79%	81%	100%

(Source: Sensis e-Business Report, 2010)

Table 2.4 Selling over the Internet of SMEs

	Small businesses			Medium size businesses		
	Take orders	Receive payments	Access to the Internet	Take orders	Receive payments	Access to the Internet
2001	19%	13%	75%	35%	29%	95%
2002	29%	26%	79%	47%	50%	94%
2003	32%	32%	81%	49%	63%	98%
2004	39%	44%	86%	50%	60%	99%
2005	41%	50%	87%	51%	59%	97%
2006	46%	52%	90%	54%	63%	99%
2007	47%	54%	92%	54%	62%	99%
2008	53%	62%	93%	56%	72%	98%
2009	57%	67%	95%	56%	70%	98%
2010	58%	70%	94%	66%	75%	100%

(Source: Sensis e-Business Report, 2010)

2.6 The United Arab Emirates

According to the International Monetary Fund, the world economy was expected to grow by 4.2% in 2009, spearheaded by Asia and the Middle East, with Gartner forecasting 5.3% increase in IT spending to hit U.S. \$3.4 trillion in 2010, with a further growth of 4.2% in 2011^[20]. Although the countries in the Middle East have not been considered as active countries in e-commerce around the world, their economic strengths are too enormous to be neglected. The development of e-commerce in every part of the world should not be ignored, especially for the Middle East with advanced economies. To give a reference for the readers who are paying attention to Middle East, we simply introduce the e-commerce strategy of the United Arab Emirates which is a typical country in Middle East.

2.6.1 *Introduction to the United Arab Emirates*

The United Arab Emirates (UAE), often shortened to the Emirates, is situated in the southeast of the Arabian Peninsula in Southwest Asia on the Persian Gulf, sharing sea borders with Iran, Iraq and so on and bordering Oman and Saudi Arabia. The country lies between the dry tropics across Asia and North Africa, characterized by a tropical desert climate^[21].

The UAE is extremely rich in oil and natural gas, especially famous for oil. The proven oil reserve is 13.34 billion tons, accounting for 9.5% of the world total and ranking fifth in the world. The proven gas reserve is 6.06 m³, also ranking fifth in the world. Its national economy mainly depends on petroleum extraction and the petrochemical industry. The petroleum revenue accounts for more than 85% of government revenue. Behind the guidance of the petroleum industry, other industries, especially the processing industry including liquefaction of natural gas, aluminum metallurgy, plastics manufacture, building materials, garment and food processing account for a considerable proportion of GDP. In addition to the petroleum industry, the main industries in the UAE include food and beverage processing, textile and garment processing, timber processing and furniture manufacture, paper products manufacture, the chemical industry, nonmetallic minerals processing, steel processing, metallurgical industries and jewelry manufacture. In recent years the total investment in industrial projects has reached nearly U.S. \$10 billion.

However, the output of agriculture, animal husbandry and forestry accounts for only 2.4% of GDP in the UAE. The grain totally depends on importing; moreover most meat products and seafood are imported from other countries. Although the government has put forward several policies to encourage farming, severe weather and water scarcity have always been the bottleneck for the further development of the agricultural economy.

There is a well-developed public transportation system in the UAE. Each emirate of the UAE is connected by modern highways. 15 coastal ports and 308

docks have been constructed, handling 700 million tons of cargo every year. There are six international airports and ten heliports throughout the country. The Emirates Airlines has ranked first among the Arab world in terms of competitiveness. Bilateral agreements on air transportation have been signed between the UAE and other 82 countries including China. At present, scheduled flights from 109 airlines all over the world land within the airports of the UAE.

Foreign trade occupies an important place in the national economy of the UAE. Entering the WTO in 1995, the UAE has had trade relations with 179 countries or regions. The bilateral trade arrangements and double taxation arrangements have been signed between the UAE and more than 40 countries. The total foreign trade volume reached 660.4 billion dirham (about 181 billion dollars) in 2009 ^[22].

There are three stages in the economic development of the UAE. Before oil was discovered, the UAE had not been formed and every emirate remained sealed off. Each emirate maintained a fragile tribal economy through picking up and selling pearls. The first oil exploration agreement was signed between Abu Dhabi and the Occidental Petroleum Corporation in 1936 and the first batch crude oil cargo was exported from Abu Dhabi in 1962. A substantial transition from a tribal economy to a petroleum economy was finished during this period. During the early 1970s, a great change had taken place in the world petroleum market, featuring the shift from a buyer's market to a seller's market. The UAE and other OPEC members entered a new stage during which every member can control its petroleum industry and sets the export price of oil independently. On December 2nd, 1971, the UAE was formed. In the same year, due to political benefit and war factors, Arabic oil producing countries began to hike the price of oil. The price of light crude oil increased from \$3 per barrel to \$10.46 in 1974 and reached \$11.51 in 1975. Meanwhile, oil consumption throughout the world grew from 49.16 million barrels per day in 1971 to 57.15 million barrels per day in 1973. In this favorable market environment, the oil revenues of the UAE reached 25.5 billion dirham in 1974. After the first oil crisis from 1973 to 1975, OPEC decided to increase the oil price to \$25 per barrel in 1978. In 1980, Iran and Iraq, as two main petroleum exporting countries, slid into war, leading to sheer panic in the worldwide petroleum market. In 1981, thirteen members of OPEC held a meeting which decided to set the standard oil price at \$34 per barrel. This event triggered the second oil crisis. The considerable increase in petrol prices delivered a heavy blow to western countries, but created a great opportunity to OPEC members for the blooming of their national economies. According to IMF, the GDP of the UAE was only 1.5 billion dollars in 1972, but after only nine years it increased to 32 billion dollars. The GDP per capita increased from \$4412 in 1972 to \$30,198 in 1981, up 24% year-on-year, making the UAE the richest country in the world. However, when it reached \$34 per barrel, the highest point, the oil price began to decrease due to a slump in demand and implementations of new low-energy consumption materials. Although OPEC adopted the strategy of limiting production for turning around the decline, the oil price fell below \$10 per barrel. As a result, the economic development of the UAE faced some challenges.

According to government figures, the GDP of the UAE has been going up

steadily since the economic era called “petroleum economics” came into being. In 1995 the GDP was below 40.984 billion dollars ^[23], while only ten years later it reached \$132.3 billion in 2005. The GDP grew to 163.66 billion dollars and 190.683 billion dollars in 2006 and 2007, respectively ^[24]. A report released by the Chamber of Commerce & Industry, said the GDP grew 14.7% in 2008 and reached 800.3 billion dirham (about \$219.26 billion). Forbes said, on its web site, the GDP per capita of the UAE ranked fourth in the world in 2008, up to \$55,200.

2.6.2 Strategic Background of E-Commerce

Since the establishment of the UAE in 1971, oil revenue has transformed the UAE from a dry and sparsely populated state into a modern prosperous one. However, fire and water are good servants but bad masters. In the process of formulating national development strategies, the government has realized the UAE’s over-reliance on oil revenue. Fluctuations in oil prices have led to uneven developments of other industries, especially agriculture, tourism, transport and communications sectors. Oil resources are finite, and oil-related industries also have brought serious environmental problems to the UAE. So in the past 20 years, the UAE government has been committed to the diversification of non-oil sectors and made a top priority of developing a diversified economy, expanding trade, and increasing the proportion of non-oil income in the gross domestic product.

In the industrial field, in addition to building up a large number of oil and natural gas processing plants, the UAE has gained a lot from food and beverages, textiles, leather, wood and wood products, paper and paper products, basic metal products and industrial minerals. Moreover, the UAE has also achieved some success in tourism, finance, insurance and other service industries. Presently the UAE has become a trading center and tourist center in the Middle East, especially in Dubai Emirates. Every year millions of people go to the UAE for exhibitions, commercial negotiations, purchase orders, or do other business trips.

For the sake of trade development, the UAE has also constructed a large number of cold storages and warehouses. Up to now the UAE has already built modern storage and transportation facilities, and has also implemented the latest technology for transportation and communications to ensure the development of the logistics industry. The UAE has run the most advanced airport systems in accordance with the most stringent quality management system. Overall, the UAE has a sound internal highway network, and a three-dimensional traffic system covering land, sea and air, which provides an excellent objective environment for the development of e-commerce.

As well as developing the traditional economy, the UAE is developing the IT industry. The UAE has built *Dubai Technology, Electronic Commerce and Media Free Zone* in Dubai Emirates to make Dubai an e-commerce and IT research center in the Middle East, and the Silicon Valley in the Bay Area. The establishment of Dubai Internet City is an important measure to set up the first

“Silicon Valley” in the Middle East.

Until 2006 the UAE had 1.4 million Internet users, covering 33.3% of its total population. The proportion ranked first in the Middle East and ninth in the world. There are totally 8713 web sites in the UAE, and 1347 of them can not be viewed^[25]. The UAE’s Telecommunications Corporations are primarily operated by Etisalat and EITC-du; other companies can only lease cable from these two corporations. In 2006, Etisalat was the only telecom operator in the UAE, with a monopoly of the fixed telephone, mobile telephone, Internet access and cable television business. By 2008, Etisalat had over 7.3 million mobile phone users, 1.15 million Internet users and 1.36 million fixed-line users. EITC was listed in the Dubai Financial Market in 2005. 40% of the shares are controlled by the UAE Federal government. In December 2007, EITC said that mobile phone users passed 3 million after operating only 21 months. In 2008, the number of phone users increased to 1.8 million, fixed telephone users reached 0.28 million with a year-on-year increase of 72%; the profit was 830 million dirhams (about U.S. \$227 million) with a year-on-year increase of 58%. In 2009, ETIC planned to invest another 2.0 billion dirhams (\$546 million) for constructing communication facilities to improve capacity, coverage and call quality.

A research made by the Economist Intelligence Unit shows the UAE’s high and mature electronic level, ranking it 33rd in the world. The UAE has demonstrated a way for other countries to conduct e-commerce in the Middle East. Its established results will be used in e-commerce and will be playing a significant role in our society. Currently, the development of e-commerce is not subject to any regulatory obstacles in the UAE^[26].

2.6.3 E-Commerce Strategic Orientation of the UAE

The e-commerce strategic orientation of the UAE is to solidify the strategic position which can guarantee its key trade hub in the Arab Gulf region. Its relatively liberal social standards will continue to attract western investments from wealthy regions, which help the UAE lead Arab States and the Middle East in developing e-commerce.

2.6.4 E-Commerce Strategy in the UAE

In 2006 the UAE developed Act No.1 specifically for e-commerce, which defined e-commerce and set the target of promoting the development of e-commerce. The UAE e-commerce strategy can be summarized as the following aspects.

(1) Establishing e-commerce free trade zone and building e-commerce center

In January 2000, the governor of Dubai Emirates, Maktoum bin Rashid Al Maktoum, promulgated a decree to build an e-commerce free trade zone of 4

million square meters; it would be built into an international e-commerce center which would have nearly 20 million consumers from South Asia to Africa. By providing digital economy solutions to corporations, establishing electronic money and the accounts system, developing international digital trade rules, and ensuring e-commerce security and other channels, the free zone would build an international trading platform for the regional digital market, so that national businessmen can do business online at any time just by clicking the mouse. According to the design planning, network universities, software development centers, e-commerce transaction centers, electronic products industrial parks, computer accessories and other related assembly area network industries would gradually be improved in the e-commerce free zone, and the world's largest commercial IP phone network would be built in this region. The Network University being constructed would become the world's first Internet university, providing e-government, e-finance, e-market, multimedia, e-management, and correlative education to train more e-commerce professionals for the Middle East ^[27]. By 2007, the trade area had attracted more than 400 registered companies, including Microsoft, Oracle, MasterCard International, IBM, Dell, Cisco, Siemens, Compaq, Emirates International Bank and other major companies engaged in e-commerce. There were more than 5,000 managers here, and staffs reached a total of more than 8500. Another 350 companies were applying for business licenses in this network city. Experts believed that Dubai e-commerce free zone would play a positive role in maintaining and strengthening the regional trade hub of Dubai and increasing economic influence of the UAE around the world.

(2) Establishing a management system fitting for e-commerce and electronic trade

The UAE telecom has set a system fitting for e-commerce and electronic trade. According to the State's plan and *Federal Law No. 1 of 2006 Regarding Electronic Transactions and Commerce (the 'E-Commerce Law')*, the UAE Economic Department has promulgated two decisions and constituted a department for making laws and suggestions on e-commerce in 2006. The Telecommunications Regulatory Authority (TRA) of the UAE is responsible for technical support and human resources. The department which is responsible for monitoring and promulgating relevant laws has also been established.

(3) Establishing, managing and spreading the e-commerce platform by the government

On June 20, 2000, the UAE government set up a portal website "Tejari.com" for B2B e-commerce. This platform, owned by the Dubai government and based on Oracle, provided service for all B2B e-commerce trades in the UAE. Dubai official said that all business will be done through the website. Tejari has rapidly become the largest digital market in the Middle East. At present, more than 100,000 corporations from 15 countries do trade online through Tejari. Moreover, the Tejari trading platform has possessed total trade over \$5 billion and became the eighth EC trading platform in the world up to 2008.

(4) Removing the concept that e-commerce is insecure and establishing a security system to boost e-commerce trust

Although the telecoms infrastructure may already be in place in the UAE, the majority of consumers psychologically fear shopping online. The security issue on the Internet tops the list of concerns of most users, especially those who desire to buy via the Internet. According to a survey conducted by security solutions provider Symantec in 2008, about 75% of UAE Internet users avoided shopping online because they perceived it to be “insecure” and “too risky”^[28]. To eliminate the incorrect conception about e-commerce security, a nationwide Internet trust mark scheme to boost confidence in e-commerce in the UAE was launched by the Telecommunications Regulatory Authority (TRA) and Dubai e-Government (DEG) in 2008, which would be managed and developed as a joint venture^[29].

2.6.5 Implementations

The UAE is the first Arab country to issue laws to regulate e-commerce. With the implementation of e-commerce strategy, the UAE has been acknowledged as the most important and most advanced Arab country in e-commerce.

According to the survey report *UAE Internet Users and E-Commerce Survey 2007* concluded by the Arab Advisors Group, 51.2% of Internet users in the UAE reported purchasing products and services online and through their mobile handsets over the past 12 months. Based on the survey findings, the Arab Advisors Group estimated that e-commerce users in the UAE had exceeded 1.16 million who had spent over \$1.15 billion in 2007^[30], accounting for 1.6% of GDP, which ranked first in the Arab world and Middle East countries.

In 2008, the e-commerce trade volume of the UAE was more than U.S. \$1.36 billion (Dh 5 billion). In Feb 2008, Dubai Chamber conducted a survey to monitor the e-commerce market in Dubai, its applications, regulations, impact and future prospects in order to provide policy recommendation for improving the practices of e-commerce and to be the best environment in the region/world for doing e-commerce. Fig. 2.13 ranks the major uses of e-commerce in companies in Dubai. It is evident from the figure that the majority of companies are engaged in e-commerce. In addition, electronic payment is the most common e-commerce application (Fig. 2.14).

As per the survey by MasterCard Worldwide, the highest average online shopping spend in Asia, Middle East and Africa regions was in the UAE, with an average spend of \$1,048 in the last quarter of 2009. Airline tickets (43%), books and arts (34%), CDs, DVDs and VCDs (30%) and home appliances and electronic products (29%) were the most popular items bought by online shoppers. Due to the endeavor of the UAE government, consumers were becoming happier with shopping on the Internet, with 52% of the respondents stating that it is convenient to shop online in 2009, versus 47% in 2008^[31].

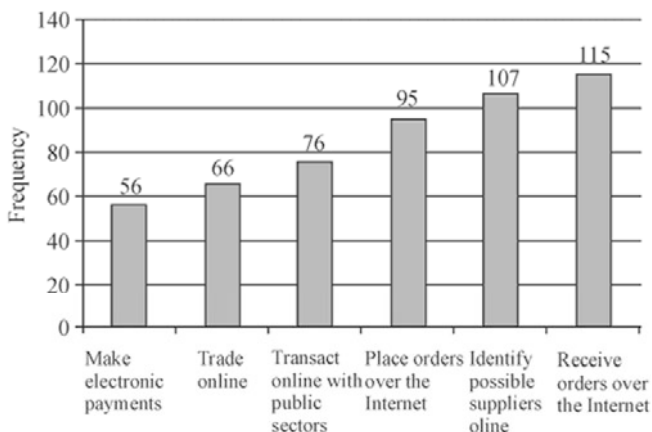


Fig. 2.13 Uses of e-commerce in companies in Dubai

(Source: zawya.com. Dubai traders are optimistic about the future of ecommerce[R/OL]. (2009-01-15) [2009-05-20]. <https://www.zawya.com/story.cfm/sidZAWYA20080512070358>)

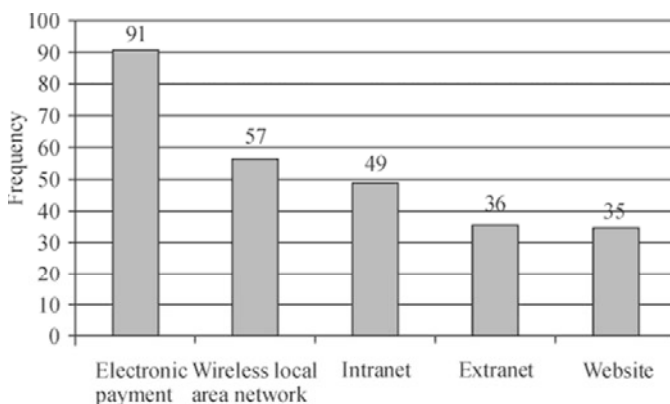


Fig. 2.14 Methods of e-commerce in Dubai

(Source: zawya.com. Dubai traders are optimistic about the future of ecommerce[R/OL]. (2009-01-15) [2009-05-20]. <https://www.zawya.com/story.cfm/sidZAWYA20080512070358>).

Nowadays, the technology environment in the UAE has become a model for attracting investments, especially in Dubai Internet City, one of the most important technological landmarks of the Arab world, which has the best environment for the launch of e-commerce projects. A quarter of UAE residents used the Internet for commercial transactions. Studies indicate that global e-commerce is expected to reach some \$13 trillion (Dh 47.7 trillion) in 2012, with the involvement of 850 million people around the world. Studies have also shown that UAE e-commerce alone will account for more than \$36 billion by 2010 ^[32].

2.7 India

2.7.1 Overview of India

The Republic of India lies in South Asia, which is the largest country on the South Asian subcontinent, and the second-most populous country with 1.2 billion people (2011 census by the Interior Ministry). India is a country with abundant natural resources. A good range of minerals were found and exploited including coal, iron, manganese, chromium, titanium, magnesite, beryllium, zirconium, monazite, mica, fluorite and oil. Mica reserves and production rank the highest in the world, whose volume of exports takes up 60% of the global volume. The reserve of coal in India is the second-highest, and both coal production and bauxite production rank fifth in the world.

India's economy is dominated by agriculture, and the agricultural population accounts for 74% of the total population. Mining and the textile industry make up the main manufacturing industries, and iron and steel, power, petroleum, chemicals, rubber, coal, matches, jute and tea are also involved. In the international business world, India's major trade partners include the United States, Japan, Britain and Russia, exporting jute products, tea, iron ore, cotton, leather, while importing food, machinery equipment, vehicles, petroleum products, steel, metals and chemical products. Since January 1991, the Indian government implemented comprehensive economic reform, gaining impressive economic growth. During the "Ninth Five-Year Plan" (1997 – 2002) period, the average annual economic growth reached 5.5%. During the "Tenth Five-Year Plan" period, the corresponding statistic was 7.8%, which was even higher. This made India one of the fastest growing countries around the world. With the influence of the international financial crisis, the rate of Indian economic growth suffered a decline from above 9% to around 5.7%. Its GDP reached Rs 5264.676 trillion rupees, or \$1.215 trillion. This data ranked it at the 13th place in the world, which was slightly lower than the expectation of the *CIA World Factbook*, at \$1.237 trillion. When it came to the 2009 to 2010 fiscal year, agriculture, fisheries and manufacturing performed very well, driving a development rate of 7.4% over the previous year. According to the Indian government's expectation, due to global economic recovery and remarkable prospects for agricultural production, the number will rise again. It is noteworthy that the quality of economic growth in India is much higher than that of China. The share of the services sector accounted for is greater, which is less dependent on imports and exports. In other words, its economy is driven by domestic demand. India has reached a considerable level in many research domains, including astrophysics, space technology, molecular biology, electronic technology and other high-tech fields.

Railways makes up the major component in the Indian transport system, and the railway sector is the largest state-owned department. India has 62500 km, of track, ranking it first in Asia and fourth in the world. In recent years, rapidly

developing road transport has undertaken 85% of passenger traffic and 70% of freight, which makes it one of the world's largest road networks.

With a population of over one billion, the Indian economy has remained undeveloped. Over 40% of residents still live below the poverty line. However, India rose rapidly to be a software superpower over recent years because of proper decision-making and positioning. Software value soared from \$50 million in 1990 to \$1.2 billion in 2004, which was an increase of over 200%. Therefore, the Indian software industry has become the main driving force of the national economy, outshining other industries. As early as 1998, India had set up the blueprint of a superpower in information technology by the year 2008, and expected that the exports of its software industry would reach \$50 billion. In recent years, Indian software manufacturing and service industry has been developing at a remarkable rate. The Indian software industry is now ranked the world's second following the United States, leaving Japan and Europe far behind. According to the statistics from the National Association of Software Service Companies (NASSCOM), the output from the information industry and outsourcing reached \$29.6 billion, increasing by 33% over the previous year. Up to 95% of the Indian software industry is oriented to the international market, and more than 200 enterprises in the world's top 500 outsource software business to India. Estimated by the authorities, the Indian software industry output reached about \$85 billion in 2010, amounting for 33% of its total exports. In the United States, the most developed country in the information industry, Indian software accounts for more than 60% of market share.

2.7.2 Background to Indian E-Commerce Strategy

“Since World War II, there was one region whose economy took off every ten years. Europe took off in the 1950s, Japan in the 1960s, Hong Kong of China in the 1970s, Southeast Asia in the 1980s, and mainland China in the 1990s; now it is India's turn.” said Surjit Bhalla, an Indian economist, who considered it a great possibility, “because India has long been below its potential for growth”^[33]. It should be admitted that his view is based on facts.

In the global software market, India has aroused worldwide attention. According to the survey reports on the strength of national software exports made by the World Bank, based on three composite indices of scale, quality and cost, India's software exports rank first in the world. India is one of the world's five largest suppliers of software, and the second largest exporter of computer software after the United States. India's software products have been exported to 91 countries, among which the United States is the largest market for Indian software products. Competitive advantage makes India the world's software center. Many leading information industry companies, such as Microsoft, Intel, Siemens, Oracle have all set up their R&D base in India, and there are more than 250 foreign companies in Bangalore alone. In the global software development market, India

accounted for a 16.7% share. Bill Gates predicted that the software superpower of the future is not the United States, not Japan, nor Europe, but India.

The Indian government played a major role in the evolution from a poor and backward country, to a major software exporter. In the 1950s, the Parliament of India passed the *Scientific Policy Resolution (1958)*, putting forward clearly the importance of science and technology as basic national economic and social principles. The support and policy of the state made India a great software exporter in the modern world. Additionally, it is very important to grasp opportunities in the international market, and integrate it with national developing strategies.

Since the mid-1980s, successive Indian governments have all regarded the development of the information technology industry, especially the software industry, as the start of the priority, to promote the improvement of overall national strength.

In the early 1980s, the Indian government announced the *Technology Policy Statement*, which further confirmed that science and technology was the basis of India's economic growth, and reiterated the significant sense of scientific research by its own resources. Rajiv Gandhi, prime minister then, emphasized again that India had missed opportunities in the previous technological revolution, and must seize later chances. He regarded the electronics industry as "the nerve of the state". The government clearly stated that India should bring itself into the 21st century by an electronics revolution, and it is the software industry that makes up the entry point of the government's promotion. This was probably the first of the developing countries that formulated a clear national IT strategy. In 1984, the Indian government enacted a policy on IT, which has specified the software industry as a preferential industry. The government promulgated in 1986 the *Policies on the Export, Development and Training of Computer Software*, which made it clear that the software industry should be provided with all necessary investment, such as providing foreign exchange facilities when importing or exporting, financial support, personnel training, high-speed transmission, streamlining procedures for both investment and import or export, and so on ^[34]. What's more, tax incentives are also provided, such as exemption from taxation if a company exports all its software products.

Singh put forward a new policy to promote the development of the software industry after coming into power. His government took three measurements to encourage exports: exemption from profit tax for software companies exporting 100% of output; reducing the import duties from 65% to 25% for software companies whose actual export totals reached 3 times the foreign ordered amounts; and the last one, exempting dual taxation on exported software. Although Singh's government stepped down only 2 months after the policy was put forward, Sekar's government, the successor, contributed to the Parliament to pass the bill, even though upset with troubles both at home and abroad.

In the 1980's, Rajiv Gandhi's government had changed the import substitution policies and stressed: "Whatever contributes to technological updating and benefits exports, be they raw materials, industrial equipment or capital, can be

imported.” The policy, together with the cancellation of import controls for equipment and industry, greatly stimulated the development of India’s export-oriented software industry.

After establishment, the Vajpayee government announced making India a “global information technology superpower” and the “pioneer of the information evolution era”. Molasuoli Malone, Minister of Commerce and Industry, said, “We missed all the previous industrial revolutions, but do not want to miss this information industrial revolution sweeping the world.” He also declared, “We will become an information industry power.” At the same time, Prime Minister Vajpayee clearly stated that both information technology and biotechnology are two of India’s major knowledge-based industries which he would focus on.

Software Technology Park of India (STPI) was a government agency in India, established in 1990 under the Ministry of Communications and Information Technology. The first three STPIs were Bangalore, Bhubaneswar and Poona. By 1998, India had already established 25 STPIs around the country. Software companies in the parks developed rapidly under the guidance of policies published in 1984 and 1986.

In 1998, Prime Minister Vajpayee formed a “National Information Technology and Software Development Committee”, which was composed of a wide range of people, and had considerable power. The Committee issued the famous “Information Technology Development Project of 2008”, and clearly claimed to achieve the goal of “software superpower” by 2008 which was also the sixtieth anniversary of Indian independence. It is also stated that India aimed to achieve output value worth \$87 billion, and export \$50 billion, as well as the requirement that “information technology permeates the entire country.”

To encourage software exports, the Indian government has supported the software industry in tax revenue, including exemption from profit tax for software companies exporting 100% of output; exemption from taxation of domestic goods; allowance of a 4% rate of depreciation for software imports with the purpose of promoting software exports, or domestic sourcing; allowing companies to use 30% net revenue from foreign exchange for investment abroad, establishment of a related organization, hiring foreign experts, purchasing design drawings etc. Moreover, the Indian government adopted a series of preferential tax policies to attract foreign investment, and encouraged software companies and manufacturers to set R&D groups, undertaking new research programs. It also introduced the software industry to the venture capital industry, providing financial support, loan priority and preferential rights.

Establishing STPI has not only attracted foreign investments, but also promoted the development of India’s software industry. The Indian government formulated a long-term strategy to focus on developing computer software. Since 1987, the government has invested 50 million Rupees in establishing related facilities for each STPI. Today, Bangalore is not only India’s software capital but also the world’s fifth-largest information technology center, as well as one of the world’s top 10 “Silicon Valleys”.

To further develop the software industry, the Indian government established a

series of software technique parks from the south to north, forming a national software technique network. Up to now there are 17 STPIs and over 1,300 companies registered in these parks from home and abroad. The Indian government provided these software companies with a series of favorable terms, including exemption of income tax for five years; exemption from import duties for computer and related hardware; and exemption from income tax for software companies whose products are all exported.

From the perspective of personnel training, the Indian government has been taking various steps to accelerate the education of IT talents. First, the investment in the internationally famous Indian Institute of Technology was increased. Second, information technology institutes were built in all the states, following the example of the Indian Institute of Technology, to cultivate and educate high-level IT professionals. Thirdly, civilian-run schools were strongly encouraged to train qualified IT personnel. Last but not least, famous software companies were also encouraged to provide education. A number of internationally known IT companies have joined the project of Indian education, for example the Intel Corporation has recently decided to fund India to train 200,000 IT teachers in order to promote information technology education.

The successful implementation of information technology strategies mentioned above contributes to the evolution of India from a poor and backward country to a software power. The government has been fully aware of the tremendous power of information technology and benefits a lot from it. At the stage of the transition from software to e-commerce in information technology India took advantage of the opportunity, and published e-commerce strategy in the new developing era, further promoting its domestic economy.

2.7.3 Orientation of E-Commerce Strategy in India

India has benefited a lot from the rapid development of information technology. As the continuation and extension of India's information technology strategy, its e-commerce strategy undertakes the relay of making India an economic power. Specifically, the orientation of e-commerce strategy of India is, by virtue of the implement of the strategy, to seek new growth points for India's information economy, enhance the rapid development of the Indian information industry, computerize Indian traditional economic activities, to bring India to the fast track in economic development with an electronic revolution, and to achieve great-leap-forward development. What's more, the strategy will help India improve its economic competitiveness in the global economy and make India an information technology power. Above all, India's e-commerce strategy differs from that of the United States, Europe or Japan. The strategy, carrying more hope, is the driving force of India's dream to become a powerful country.

2.7.4 Details about India's E-Commerce Strategy

Since the emergence of e-commerce, the Indian government positively promoted its development, which made e-commerce develop very well in India. The main aim of publishing 'Development Plan of Information Technology in 2008' was to meet the country's requirements in various fields, such as information infrastructure, access to networks, software development and exports, hardware production, electronic commerce, IT research and development, and human resources training and education. From 1999 to 2000, e-commerce turnover in India was 4.5 billion rupees; in 2002, this figure had reached 150 billion rupees. At the end of FY 2007, the e-commerce market volume was projected to be 7080 Crores (1 Crore = 10 million rupees). E-commerce has seen an explosive growth in India on the back of rising plastic card issuance. 2010 has been defining for the Indian e-commerce sector. India is one of the dominant countries in software manufacturing and selling, and its software industry occupies an important position in the world, therefore the development of e-commerce software industry is advantageous in India. Software, which is an indispensable product in the process of e-commerce development, greatly promotes e-commerce development and, in turn, e-commerce also pushes the fast development of the software industry. There will be more and more people engaging in e-commerce software development.

The Indian government spared no efforts in promoting e-commerce development, and it introduced a number of strategic measures in recent years. The author collected comprehensive information on all aspects and the contents of e-commerce strategies are summarized as follows:

(1) Opening the market and attracting private capital and foreign capital to participate in e-commerce development and construction

In order to promote e-commerce development, the Indian government made some adjustments in the proportion of foreign investment. As a result, the maximum proportion of foreign investment in the B2B field broadened from 49% to 100% (but foreign investors should transfer 26% of the shares to Indian investors within 5 years). In addition, following the practice of the United States, the Indian government decided to offer e-commerce transactions tax-free concessions in the following three years to encourage private capital and foreign capital to participate in e-commerce.

(2) Establishing a legal environment compatible with e-commerce

While the e-commerce market is in the open, the Indian government strengthens the work of legislative norms related to e-commerce. Back in 1998, the Indian government laid down the *Electronic Commerce Act of 1998*, removing the obstacles induced by paper-based laws. It involves many areas such as evidence, finance, and criminal responsibility, not merely limited to transaction type, and it is strong operationally. In 2000, the Indian government carried out the *Computer Piracy Law* and the *E-Commerce Law*, which provided a legal framework scrutinizing digital signature system and became the legal guarantee for the smooth development of e-commerce. The *Information Technology Act*

2000 (*ITA-2000*) (*IT ACT*) which became effective on December 18, 2000, provides specific penalties for some illegal activities such as unauthorized access to computer networks and databases, spreading computer viruses, interference with service, software copying, tampering with the original file, forging electronic signatures and so on, and identifies the legal basis approving electronic contracts, electronic writs, and digital signatures, which makes India the 12th country owning such laws. This indicates that the management of e-commerce in India has stepped into a new legal management stage, and its law-based control toward e-commerce marches at the forefront of the world. Besides, the related departments of the Indian government are studying defining laws to regulate the Internet, and setting up a special committee to research on how to levy taxes on e-commerce activities.

(3) Establishing and improving related infrastructure

The rapid development of e-commerce relies on the improvements of related infrastructure and enhanced application coverage in information technology and communication technology. In view of the low popularization rate of telephone and Internet in the early development of electronic commerce in India, the related departments of the Indian government strengthen the infrastructure, communication and network facilities.

First of all, in terms of infrastructure, the government of India reinforces the investment and constructions in harbor installations, intermodal facilities and storage facilities to enhance the flow rate of goods or services, and to match the information stream created by e-commerce.

Then, in terms of the communication facilities, India has recently further relaxed restrictions on foreign investment in communications, increased investment in communications infrastructure, expanded the communications network, and taken measures to reduce the communication cost effectively. Also, the Indian government and the business community are planning to construct the National Communication Backbone and develop the satellite phone. Following the designation of 2007 as the year of broadband in India, a former minister of Communications and Information Technology proposed the plan of universal free broadband, which made free access to 2 Mbit/s broadband services become a reality and attracted extensive attention from the international ICT industry.

Finally, in terms of the network facilities, India has already begun to construct a National Internet Centre by NASSCOM as the core, while the DGFT of India takes the lead in designing and constructing network architecture and a platform for e-commerce transactions to make possible transactions via the Internet. Also, it has exploited an Electronic Payment System connecting banks and other financial institutions.

(4) Actively promoting the application of e-commerce

In order to promote the application of e-commerce, the government of India organized and constructed an e-commerce network linking DGFT and related companies as well as all foreign trade companies, and it requires that all the trade data should be registered on the DGFT website. In the beginning period of this measure, exporters suspected that their export data might be exposed to

competitors and had the risk of being tampered with, so they were reluctant to abide by it, but after operating for some time, exporters' concerns had been greatly reduced with their increasing understanding of the system.

(5) Organizing seminars and exhibitions on electronic commerce, popularizing e-commerce knowledge, and fostering the e-commerce market

The India NASSCOM organized two international symposia and exhibitions on e-commerce in 1999 and 2000 respectively. More than 800 people participated in the first one and more than 100 people made a presentation, more than half of whom were senior executives of large companies; in particular, the second one held at the end of July attracted more than 1500 participants from various parts of India, and the number of lectures reached 170. These measures helped to train the user base of e-commerce to some extent.

(6) Supporting the development and export of e-commerce software

Like the software industry, e-commerce in India will not have sufficient demand if just relying on the domestic market because India's e-commerce market is still too small. Therefore, India first adopted an export-oriented strategy to meet the needs of the international market by carrying out research and development, as well as to develop the basic economy and foster the domestic e-commerce market.

2.7.5 Implementation of E-Commerce Strategy

India's information industry development strategy leads to a leap forward and big growth for India's economy. Although India's economic scale is still not large enough, with its traditional economic sectors still relatively backward, India's software industry, or IT industry, has already become the world's most competitive industry. India's development driven by the software industry has remarkable advantages over Chinese development in terms of both quality and cost. Therefore, India is welcoming a bright and promising future. It is less than one decade since the implementation of India's e-commerce strategy, during which it experienced a severe decline in e-commerce from 2001 to 2004. From an overview, only initial achievements of the strategy in India have been made by now. These achievements include:

- The strategy of improving e-commerce infrastructure drove the construction of the communication network, the Internet, ports, railways, highways, airports, and so on, which directly stimulated the growth of the traditional economy. Some radiating effects of the IT industry have emerged in those traditional economic sectors. Additionally, the number of Internet users in India increased sharply. According to the survey by NASSCOM, only 100 cities in India could access the Internet in 2000, and individual Internet service was provided in only 25 cities. However, the population of netizens in India reached 38.5 million by December 2005, and the number was up to 100 million after two years, which has launched a widespread user base. In 2006, the Indian government invested \$17 billion in the IT and telecom industry, in which \$15 billion was injected into the telecom

industry. Although India's broadband penetration was very low, with only 1% of family Internet users having ordered high-speed services, it was predicted that the utilization ratio of the high-speed network would continually increase together with the utilization ratio of e-commerce. India was ready for the massive growth of the Internet industry. At present India has 650 million mobile Access Points with more 20 million accesses per month, which cultivated a huge market for the growth of Mobile e-commerce.

- The implementation of e-commerce strategy attracted a large number of information technology giants like IBM, etc. to establish e-commerce enterprises and E-business software enterprises in India. American companies such as Yahoo, Google and eBay all expanded their business in India and attracted large amounts of venture capital inflow, which contributed to the development of local enterprises. India's biggest Internet companies are two news web portals similar to Yahoo: the private company "Indiatimes.com" with total sales of more than 2000 million dollars and "Rediff.com" listed on NASDAQ, of which the revenue in 2005 reached \$12.6 million dollars^[35]. In the first quarter of 2006, there were three Internet companies who got \$7 million to \$10 million dollars as venture funds from India's leading WestBridge Capital Partners. Beginning in 2006, India stepped into the Internet era.

- A relatively sound legal system of e-commerce was established, which has cleared the way and laid a foundation for the further development of e-commerce.

- The economic growth was boosted, dependent on the software service. It reached the objective of "educating and attracting millions of software talents and export software products valued at \$50 billion in 2008". Up to May 2010, the gross value of the global software outsourcing market was \$250 billion – \$300 billion, while India, just one nation, occupied a market of \$50 billion, with rapidly growing speed^[36]. By virtue of the diversity and flexibility of its services, less dependence on capital, taking advantage of a powerful middle class, the ability to provide and enjoy services, skilled English and a favorable education, as well as strong consumption, considering the IT industry as a leading indicator following the uncommon economic development theory from agriculture to industry then to services, India is very likely to have an information technology industry that is the leader of economic growth.

- E-commerce market turnover grew sharply and meanwhile the application of e-commerce was extended to all industries. With the three triggers of shopping convenience, time saving and the availability of a wide range of products, e-commerce has boomed in India. A survey conducted by IMRB and Internet & Mobile Association of India (IAMAI) says that the average growth rate of the e-commerce market during 2007 – 2008 was projected at 30%. According to IDC, online sales of airline tickets, car rentals, and hotel reservations make the travel-related services the biggest e-commerce online markets in existence today. As per an airline IT trends survey, 49.9% of tickets were sold through GDS channels, 26% through all web channels in 2009. However, this break-up is expected to change to 37% and 41% respectively by 2013. Similar to the travel

industry, other sectors like Online Classifieds and eTailing have all turned to e-commerce or e-distribution channels.

It can be foreseen that, along with the implementation of e-commerce strategy, in the near future we may see India standing on the commanding heights of the economy as an economic giant in Asia.

2.8 Ireland

2.8.1 Introduction to Ireland

The Republic of Ireland is a country with a long history of more than 5000 years. The country covers five-sixths of Ireland¹, which is the third largest island in Europe and the twentieth largest island in the world^[37] with a total area of 84,421 km². The population is estimated to be more than 4.5 million according to the Central Statistics Office (2011 estimate).

Rich in lead-zinc ore, Ireland now ranks as the seventh largest producer of zinc concentrates in the world, and the twelfth largest producer of lead concentrates. Other mineral deposits with actual or potential commercial value include coal and peat. The combined output from these mines make Ireland the largest zinc producer in Europe and the second largest producer of lead^[38]. But generally speaking, Ireland lacks natural resources. Scarce minerals can only meet 30% of the local needs of energy and all others completely rely on imports. Due to the geography, most international transportation is undertaken by sea. Income from foreign exchange from international tourism takes up a large proportion of total income and this maintains steady development.

There are various industries in Ireland. Electronics, telecommunications, chemical industry, pharmaceuticals, machinery manufacturing, mining, textiles, garments, leather, papermaking, printing, food processing, tobacco and wood processing can be all found. In recent years, modern industries like chemicals, electronic engineering and software have advanced by leaps and bounds, while the proportion of traditional industries such as clothes, shoes and leather has decreased clearly. Animal husbandry is the key factor determining the gross output value of Ireland's agriculture. Over 77.5% of the earnings come from livestock and related products. In Ireland, the cultivated land and woodland cover 75% of the entire land area, creating 7% of the whole labor force who engage in farming.

Ireland declared itself a republic in 1949. Historically, Ireland was a state focusing around agriculture and livestock, so it was once called the "European countryside", also known as the "European farm". During the initial independence, the Irish government utilized tariffs and trade barriers to protect domestic

¹ Here it means the island of Ireland. In this book, all the words like "Ireland" refer to the Republic of Ireland except for footnoted ones.

industries like many other countries. Under these protectionist policies, Ireland was driven to become one of the poorest countries in Western Europe and experienced high emigration. While other European countries enjoyed fast growth, Ireland suffered economic stagnation^[39]. The policy changes were drawn together in *Economic Development*, an official paper published in 1958 that advocated free trade, foreign investment, productive investment, and growth rather than fiscal restraint as the prime objective of economic management^[39]. Before the 1960s, little manufacturing was developed except for the last factories inherited from Britain. Until the 1980s, the Irish economy still lagged far behind West European developed countries, with high unemployment at 17% and an inflation rate jumping over 10%, uprooting the young to look for jobs. An economic crisis led Ireland to start large-scale economic reforms from the agricultural and husbandry economy to the knowledge-based economy in the late 1980s^[40]. On the one side, Ireland reduced taxation and regulation dramatically, compared to other EU countries. On the other side, it made great effort to develop software and bioengineering. The Irish economy grew rapidly during the 1990s, which saw the beginning of unprecedented economic growth in a phenomenon known as the “Celtic Tiger”^[41]. Since 1995, the economic growth rate has been sustained at a high speed of 9%, and it rose to 10.5% in 2000. It is the accurate strategy of the Irish government that contributed to the economic take-off.

In the 1960s, especially after the 1970s, Ireland began to adjust national policy fundamentally. In 1973, the state joined the European Economic Community (European Union, EU). At the risk of failure, the government began to put the proposal of *Economic Development* into action. This bold decision has been maintained and proved absolutely right by successive Irish governments. After being a member of EU, the strategy of attracting foreign investment to accelerate industrialization was adopted in Ireland. With the aid of the EU, Irish communications facilities were greatly enhanced, but the scale of manufacturing still posted disappointing growth. Nowadays, Dublin is considered as a small but very prosperous international financial services center. The Tax Preferential Policy with a simplified process that stipulates that foreign manufacturing enterprises and financial service companies needed to pay only 10% of Corporate Income Tax until January 2003, and then the tax rate was modified to 12.5%. Even so, the tax rate remained the lowest in European countries. At the same time, the government founded a special investment institution responsible for providing quality services to foreign investors.

Ireland has formulated various incentive mechanisms to encourage the development of Irish industries. For many years, efforts at optimizing the mechanism to meet the changing needs of modern hi-tech industries were never stopped. For the purposes of encouraging individuals and foreign capital to invest in software, networks and related services, the government established high-tech venture investment funds in 1996. Three years later, relevant departments put forward the “international trade services plan of high-tech field”, presenting the entire development strategy in detail.

(1) Orientating towards high-tech industry: The Irish market was too small for low-profit companies to succeed at home. Therefore, Ireland sought to develop profitable enterprises producing hi-tech goods. It is the key to Ireland's success that the government realized the problem in time and formulated corresponding strategic objectives and policies as soon as possible. From then on, industries like electronics and pharmaceuticals were classified as vital industries for future development with a large amount of government budget infusion. From the 1970s to 1980s, the government concentrated on developing burgeoning software and telecommunications. In the 1990s the state paid great attention and offered extended support to the field of the Internet and multimedia, including e-commerce and remote services.

(2) Taking infrastructure construction seriously: To wake up the hi-tech product economy, Ireland has stuck to constant perfection of the infrastructure since 1960. In the mid-1960s, the government implemented a large-scale investment plan in telecommunications which pushed Ireland to have the leading digital switching system in the world. In later years, parts of the nationalized telecom company were hived off to private ownership, giving birth to foreign and local private telecommunications companies. At present, Ireland has been ranked as the first choice Internet center. In 2007, 23.5% of the Irish, totaling nearly one million citizens, used the Internet, well above the average (18.8%) of industrialized countries published by the OECD in June 2007.

(3) Devoting major efforts to developing education: Thanks to the official support, the Irish educational sector regained its thriving vigor. Growth in the economy since the 1960s has driven much of the change in the education system. From the early 1970s, general universities and colleges increased the number of new entrants year by year. Irish citizens have needed to pay less and less for education during the past twenty years. The proportion of the national revenue that public education expends ranks second among developed countries. Now education in Ireland is free at all levels, including college (university), not only for citizens, but also for students applying from other EU member states ^[42]. This series of innovations has sent more individuals to universities and as a result created one of the world's most highly educated workforces, making an enormous contribution to the new economic development.

(4) Opening and joining the EU: Along with the development of the EU, Irish export corporations gained access to the European market, exempted from duty. This policy has been attracting foreign direct investment for such a long time that the market for free trade achieved rapid expansion. While constructing Irish infrastructure, generous aid was also sent to Ireland by the EU. From this point of view, it can be said that Ireland stands among the biggest beneficiaries of the EU Structural Funds.

The continuous long-term stimulus makes Ireland one of the most open economies in the world. Enterprises that invested and settled in Ireland have reached more than 1000, including Microsoft, Motorola, Lotus, HP, Symantec, Sun Microsystems, Plantinum, Novell, SAP, EDS, IBM, Dell, Intel and Apple, which has made a solid base for the Irish economic take-off in the 1990s. In 2006

Ireland had the second highest GDP per capita in the EU-27¹ at 45.4% above the EU average^[43] with a low unemployment rate at 4.3% and an inflation rate at 2.5%. Based on net assets, Ireland turned into the wealthiest nation second to Japan and prior to America among all members of the OECD. The financial crisis of 2007 – 2010 significantly impacted the Irish economy, but Ireland still led the world in GDP per capita. In 2010 Ireland is ranked 13rd in the *List of Countries by GDP (PPP) Per Capita*² by the IMF and eighth by World Bank.

2.8.2 E-Commerce Strategic Background

The successful implementation of the economic strategy brought Ireland an economic takeoff. Software as a new force suddenly rose, stimulating the economy to increase at a remarkable speed. The development and prosperity of the Irish software industry has achieved a notable international competitive capacity, representing the brilliant achievements of the Irish economy. More than 40% of software packages and 60% of software for business applications sold in Europe come from Ireland. The report of the OECD in 2000 has shown that Ireland has overtaken the United States as the world's biggest exporter of software, with a rate at 35% of GDP occupied by high-tech products. By the end of 2005 over 1,200 software enterprises had registered in Ireland containing 200 foreign-controlled businesses. All top ten software vendors on the world's ranking had branches there and some of them also set up R&D centers with 0.3 million employees to work for them. In 2007 Irish software products grossed 22 billion EUR. Moreover, the export values exceeded 21.5 billion EUR accounting for about 95% of total sales. Irish local software enterprises earn 1.4 billion EUR and exports rose to 1.2 billion EUR, 73% of the overall sales. Irish software enterprises mainly engage in development and customization, localization and internationalization, production and sales and technical support, and are involved in fields such as communication products, bank/finance, software tools and middleware, Internet applications, multimedia and computer training, etc. Due to years of efforts, Ireland has grown gradually into an international leader in OLE, mobile communications, enterprise management, middleware, encryption technology and safety. Besides, great progress has also been made in the service sector like financial services, customer services, long-range learning and contact centers. From the very beginning Irish indigenous software companies sold the software products overseas and established an export-oriented sector. More than 90% of the domestic software products were exported. Therefore, Ireland has won various reputations such as

¹ EU-27: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

² Lists of countries of the world sorted by their gross domestic product (GDP) at purchasing power parity (PPP) per capita. GDP dollar estimates here are derived from purchasing power parity (PPP) calculations.

European Software Center, new Silicon Valley, software kingdom, energetic high-tech state and so on.

In the late 1970s, the Irish government made a significant decision to concentrate on expanding high value-added industries, especially to pull up the employment proportion of college graduates in these fields. High-quality personnel inspired American software companies to select Ireland as their localization base spreading to European and other markets. IBM, Lotus, Digital Equipment (HP) and Microsoft took the lead to enter Ireland, and soon after that Ireland turned into an ideal option for the localization of software companies. Oracle, Novell, Informix (IBM) and SAP moved to Ireland one after another and some companies like Sun Microsystems, EDS and Motorola even chose Ireland as the productive base for new software projects. In the 1990s, a number of computer hardware manufacturers changed direction to software development, including Ericsson, Amhahl (DMR) and Nortel Network (Nortel Telecom).

The majority of Irish indigenous software enterprises were set up in 1996 – 1998. Although a small quantity of them emerged during the 1970s, the real software industry was formed in the late 1980s. Thanks to the unremitting efforts of the Irish Software Association, the government realized the strategic position of the software industry and founded the National Software Directorate in 1989 that promoted the development of the software industry. As a crucial fundamental construction, a Venture Capital fund supported by the government was established in 1996, which played an important role in the expansion of the software sector.

There are some common characteristics among all the successes which constitute the crucial factors in the improvements. First of all, different from India, the Irish software industry is product-oriented rather than service-orientated. Before 1990, Irish local software companies mainly developed software customized for different kinds of customers. This kind of service earns little and is exported rarely. From 1990 to the mid-1990s, an obvious change happened. A service economy was transformed to a product economy and the home market was converted into a foreign one. Second, the export market takes a priority. Irish domestic market is so small that companies had to rely on exports. Third, a perpendicular professional market was set as the objective. With highlighted special product orientation, technology and experience were integrated to avoid competitors like Microsoft and Oracle. It vividly described the outstanding insight into the underlying market of Irish enterprises. Fourth, product quantity and flow control highly concerned Irish enterprise managers. Most enterprises passed the quality certification. Finally, enterprises paid much attention to the common sense of business management and artistic managerial skills.

The history of the Irish software industry can be divided into three phrases:

- From 1970 to 1985 the industry started developing slowly by mainly providing service to customers using foreign software products. The government followed its initial target that to draw multinational companies into taking advantage of their official language and culture.

- The software industry developed steadily in the following decade from 1986 to 1995, named the second phase. Irish domestic software gradually bloomed into an infant industry. Indigenous software enterprises together as a strong industrial army growth began to sell abroad and participated in the international software market competition.

- Since 1996 the Irish software industry had been exploding. Abundant social capital, venture capital, foreign capital and transnational software companies rushed into the Irish market. World-class enterprises such as IBM, Microsoft, Motorola, Lotus and Sun Microsystems opened plants there. The number of software companies increased sharply from 390 in 1995 to more than 1,200 in 2005. Seven top-ten software giant built factories in Ireland that brought numerous employment opportunities, strengthened the capacity to earn foreign exchange through exports as well as enhanced Irish comprehensive economic strength. After half a century, the pattern of coordinated development of local and foreign-funded enterprises has formed in the Irish software industry.

The success of the Irish software industry results from the joint influence of the following factors:

(1) The assistance from the government and relevant industrial policy

Profiting from the policy support since the late 1970s, the Irish software industry has developed dramatically. How to select the industrial way was of paramount importance to Ireland then as the economy started quite late and the agricultural country was not so rich in resources. With a long-term strategic vision, the Irish government put forward its strategy and policy that set the export-orientated strategic direction and took software industry as a strategic keystone for national sustainable economic development. Ever since the strategy was addressed, more and more of the state financial budget was invested in the software industry in successive years. To encourage the development of Irish companies as well as to attract foreign hi-tech companies, the Irish government launched and continuously consummated a series of planning attaching new incentives to adapt to the changing needs of the industry and to inspire the growth of this high-tech field.

A high-tech risk fund was set up by the government to guide international or private capital into the software field. The relevant departments did enough preparations to response to the challenges of globalization and economic informatization. Efforts were made to cut down the marginal cost of general software products to nearly zero so that the overseas software market would be actively explored and the sales volume would increase. Therefore, the Irish government tried to help local software companies put their hand to export and market promotion to European and other corresponding areas of the world. To conclude, the Irish government provided support to enterprises with might and main to reduce the cost of enterprises and simplify all business affairs. This policy assists enterprises to obtain more and better chances of success.

The Irish government strengthens the organic integration of production, education and research and stresses the transformation from science and technology into actual productivity. Based on this principle, the Irish government

not only united with enterprises but also banded education and industry together. The government signed agreements with all enterprises that had cooperated with colleges and invested in equipment and software. Owing to these agreements, eight software development centers were established with joint capital and many real technology and training centers were formed. Another help came from the Overseas Incubation Service System, especially for the exploitation of American markets. The comprehensive service system became the important guarantee of the international market for Irish enterprises. These incentives played extremely effective roles in the process of drawing direct investment and developing local companies, and resulted in an unprecedented success of the Irish software industry.

(2) The positive influence of education

Ireland was listed as the European country with the highest quantity of education in an independent report about international competitive force. In the 1970s, realizing that the world would step into the age of information technology, the Irish government established the department of computer science in famous Trinity College and twelve technology institutes to foster IT talents. As a carrier for development, the software park was also built. It can be concluded that “education first” was the most important experience for the rapid development of the Irish software industry. The reason why Ireland is favored by foreign corporations is that Ireland has large quantities of high-quality talents who make Ireland more adaptive to the development of high technologies than other countries. Altogether 140 thousand Irish citizens were hired by foreign corporations. Education has contributed a great number of high quality employees to the long term development of foreign corporations which strengthens corporations’ confidence in Ireland.

Besides building two polytechnic universities and eight regional technical colleges, the government reformed the curriculum provided by traditional universities and educational institutions, encouraged private education institutions to establish colleges and set high teaching standards for them. In order to maintain the strength of software and other high-tech industries, Ireland launched the project of technology and education with the theme of “schools and IT in 2000”, investing \$47 million within five years to reinforce the universal education of computer science and ensure the Internet connected to all Irish primary and middle schools. The Irish Council for Science, Technology and Innovation (ICSTI), Science Foundation Ireland (SFI) and Advisory Science Council (ASC) ^[44] were established successively with an additional investment fund equalling \$390 million to improve education facilities and expand fresh research fields like software. In the Irish state development planning of 2000 – 2006, the government deployed an investment of 2.5 billion EUR into science, technology and innovations. In these funds of higher education, 698 million EUR went to higher education to strengthen the connection with industry and the fostering of engineering graduates; 711 million EUR went to establish the “Foresight Fund” to support the basic research in biotechnology and ICT; 267 million EUR was used for promoting the cooperation network between universities, research institutions

and industries; the rest was allocated to research plans related to industry, agriculture, fishery and environment technology^[45].

With a unique education mode, graduates major in information technology are all technically advanced. Students in the software departments need to finish their one-year internship in the forefront of work and production when they come to the third school year and then complete independent design before graduating. As a result, once students get their degrees, they have fully mastered practical experience and ability of software project leadership. Some experts consider IT talents cultivated in Ireland more creative and well-trained than those from America. After the systemic training, Ireland has possessed a batch of first-rate software developers, electronic engineers and integrated circuit designers.

(3) The advantage of the geographical location and language

Language is a very important factor that leads current Irish achievement. Apart from using English as the second official language, most Irish citizens can skillfully speak another or even a third language. Due to historical reasons, numerous European persons have immigrated to Ireland. The incomparable advantage of language and cultural background brought Ireland a stable position in the international software market. Ireland shaped itself as the processing base of European visions for American software companies. Based on supporting policies of the Irish government and the endeavor of software enterprises, Ireland gradually became a collecting and distributing center to Europe for American companies. The European Union is one of the world's largest and most wealthy markets with a population of 500 million and annual GDP exceeding \$1.45 trillion. Ireland joined the EU in 1973 and accumulated quite a number of experiences and skills in merchandising in Euro-markets.

(4) The support from Venture Capital and other funds

There were few venture capital funds before 1996. Sponsored by the European Regional Development Fund (ERDF), the government established the "EU Seed Fund and Venture Capital Project" within the framework of domestic industrial development plan in 1995. Enterprise Ireland was in charge of the seed and VC fund to provide a capital base to Irish newly-established companies and SMEs. The funds of private venture investment management companies still should be invested in key areas defined by the government. Both the "special high-tech industry venture capital fund" set up in 1996 and the Foresight Fund set up in 2000 were devoted to promoting the development of the software industry.

2.8.3 E-Commerce Strategic Orientation

Ireland realized that the Internet would bring global challenges much earlier than many other countries. As early as 1998, the government set up the Irish Information Joint Committee (IJC) and expressed the first Information Society Action Plan one year later with the intent of helping all citizens earn benefit from the use of the Internet as well as trying to participate in the fierce competition of

the international information industry. Meanwhile the Irish government also committed itself to develop electronic communication infrastructures, strengthen the environmental construction, look for the opportunity for e-commerce, strive to digitize the public service domain and to advocate using the Internet across society. The government also set up the information industry fund to coordinate the implementation of the plans. Irish information industry development strategy has gained a huge success that has changed Ireland from a developing country of poverty and backwardness to a developed country owning high technology. Irish e-commerce strategy is aimed at the continuous economic development momentum in Ireland through the implementation of e-commerce strategy. “Ireland has the potential to become a world center for software digital distribution over the Internet and a niche player in key areas of electronic commerce” said John Travers, CEO Forfás, when he presented a major new e-commerce policy action report entitled *E-Commerce—The Policy Requirements* to the Tánaiste and Minister for Enterprise, Trade and Employment, Mary Harney, T.D (29 July 1999)^[46].

The strategic positioning of Ireland e-commerce strategy is to utilize e-commerce to push the development of the IT industry, thus to ensure the healthy developing tendency of the Irish economy; to foster Ireland as a robust athlete in the global e-commerce arena by the development and application of e-commerce technology; to transform Ireland into a calling center and an e-commerce center through providing large multinational companies with e-commerce services. All these together will lead Ireland to be one of the world’s most developed countries.

2.8.4 E-Commerce Strategy in Ireland

The Irish government takes exports as the center, the software industry as its long-term economic development strategy to stimulate economic growth successfully, and take the state with a great step forward toward a great power from being a backward agricultural country. But the government has never been satisfied with the achievements. Irish leaders understand that if they want to stimulate new rapid economic growth in the fields of the Internet and e-commerce, they have to formulate the strategic planning from a higher point of view in future. This idea forms the soul of Irish e-commerce strategy. The Irish government has been supplying positive support with the development of e-commerce. After the financial crisis in 2008, the developing speed and status of e-commerce in the new economic system were further confirmed. The comprehensive analysis of e-commerce strategy of Ireland is as follows:

(1) Establishing the e-commerce management service system conducted by Irish government to advertise e-commerce, direct the development of e-commerce and put forward suggestions on problems met during developing e-commerce

To ensure the leading position in the international IT industry, the Irish government improved the first Information Society Action Plan entitled *New*

Connections in March 2002. In order to further enhance the efficiency, IJC was restructured. In October 2004 a second improvement was made to *New Connections* that proposed a series of guidance plans focusing on electronic communication infrastructure, environmental protection laws and regulations, E-government, e-commerce, R&D, and the Digital Content Industry etc.

Since 1999, the Irish government has taken measures to advocate the concept of e-commerce and help enterprises acquire potential profit through IJC. Moreover, the government has also published a series of constructive reports to promote information technology and the application of information communication. In 2000 the government invested 300,000 EUR in an e-commerce recommendation project and another 3.6 million EUR in founding EMPOWER Association to popularize the utilization of e-commerce in domestic small businesses. In 2003, Irish eBIT and the chamber of commerce Prism III were established one after another to provide enterprises implementing e-commerce with consultation, equipment and training, etc. Besides organizing management and service organs, Enterprise Ireland invested multiple funds to accelerate the development of e-commerce.

In 2003, Forfás released a report entitled *Forfás E-Commerce Report 2003*, showing that Irish local e-commerce enterprises had done well in founding and attracting foreign capital but still lagged behind those enterprises with a high level of engagement with e-commerce in other EU countries. With the purpose of narrowing the gap with developed countries, the Irish government established the IT Industry and e-commerce Group in December 2003 consisting of Forfás, Enterprise Ireland, Shannon Development and City and County Enterprises Board^[47]. A national e-business strategy was devised by the Department of Enterprise, Trade and Employment, and published in December 2004, based on the outputs from a project group established in 2003 to assist SMEs, including microenterprises and particularly those in the non-ICT producing sectors of the economy, to use ICTs in a way that will maximize their competitive advantage^[48].

The groundbreaking work of the Irish e-commerce Group dated from November 2003. In that month the Central Statistics Office Ireland issued the *Irish IT Industry Statistics Report 2003* which presented in detail the development of Irish telecommunications and IT industry including a survey of the engagements in enterprises and families. The survey showed that in 2003, 95% of Irish enterprises worked with computers, 85% used email and 86% integrated the Internet into their work.

Since the Lisbon conference in 2000, the EU has set out the actions and targets agreed at EU level to stimulate greater usage of Information and Communication Technologies (ICTs) and build the EU into an economic entity with vitality and competitive advantage. *The eEurope Action Plans 2002 and 2005* aimed to extensively stimulate the application of ICTs in all industries and exploit the opportunities offered by the Internet^[48]. Ireland joined the *eEurope Action Plans* in January 2003. The Department of the Taoiseach served in an ICT-related branch organized by the cabinet as Director General of IJC and assistant controlling the power of appointing the secretary-general of IJC. The Department of Enterprise,

Trade and Employment was responsible for those aspects of the EU and national strategies related to e-commerce and for the transformation of e-government as well. Since 1999, the Irish government has contributed in total 16 million EUR to construct organizations of the IJC so as to help enterprises seize opportunities brought by ICTs.

(2) Perfecting the legislation of e-commerce to ensure the interests of all parties

The Irish government strives to build a European EHUB in Ireland. In order to make sure that consumers and enterprises are able to engage in e-commerce activities easily and safely, the government enacted the *E-Commerce Act, 2000*, which is one of the most influential laws in the international IT industry. As a milestone for supervising business activities in a flexible way, it gave an explicit definition of Electronic Signature for the first time and made it possible to conclude a legally binding contract online. Considerably less legalistic and more business-friendly than the UK's bill, it enabled electronic signatures, dealt with contract issues, and proposed a new regime for domain name registration. It also protects the rights of businesses and individuals to use software programs that encode and decode electronic documents. This move creatively established the legitimate equality between documents, contracts, signatures and seals in electronic form and those in traditional form.

Ireland's e-commerce new regulations came into force on Monday 24th February, 2003 which provided for the free movement of Information Society services within the European Economic Area ^[49]. In November 2003, Ireland's Minister for Communications, Dermot Ahern, signed new regulations dealing with spam, cookies, and other privacy issues relating to electronic communication. The release, update, transmission, collection and alteration of data and individual privacy information were all specified subject to this new law that strengthens the confidence of e-commerce terminal users. For the sake of regulating and coordinating the healthy development of the IT industry, the government successively promulgated the *Copyright Law, Patent Law and Trade Marks Law* to make IT industry standards. What's more, the Department of Enterprise, Trade and Innovation formulated the Irish legal framework and the reference of e-commerce through Forfás, and then issued detailed rules and regulations through a subdivision of the department. From then on all e-commerce transactions could find related laws to obey.

(3) Strengthening the construction of infrastructure

The Government's May 2001 package of e-commerce measures included extensions to international connectivity, and also provided improvements to regional broadband infrastructure. As a result of the first proposals under the E-Commerce Infrastructure Measure of the National Development Plan, approximately IR£200 million worth of infrastructural investment had been implemented by the end of 2002.

The government spent \$3.5 billion to build the world's most advanced and mature telecommunications network and a broadband network covering both urban and rural areas to lessen the digital gap between the two areas. A one-time

procurement was invested to realize information sharing among enterprises; meanwhile benign competition amongst telecom companies was encouraged to further attract infrastructural investment so as to build the best telecommunication facilities with minimized cost. The government aimed to construct a global network export of e-commerce in Ireland.

(4) Executing long-term tax preference

The Irish government made the success of the e-commerce center by means of comprehensive utilization of imaginative legislation, an infrastructure of high quality and preferential taxation. The correctness and completeness of this view will not be discussed in this book, but the Tax Preferential Policy it referred to is an important component of long-term Irish e-commerce strategy. Successive Irish governments always give the matter of attracting foreign capital investment a top-priority. As a result the tax concessions, government subsidy and the protection of investors never stop. Details about the Tax Preferential Policy include: manufacturing companies registered in Ireland before July 31, 1998 only needed to pay no more than 10% income tax before 2010, up to 12.5% by 2011; international service enterprises such as finance, wholesale and consultation registered locally on July 31, 1998 should pay at most 10% of income tax before 2005 and up to 12.5% in 2006. The income tax level is much more preferential compared to the rate of 30 to 40% in most countries of the EU. In developed countries the tax rate is so extremely low as to make Ireland a globally famous low-tax and favorite channel for exporting to Europe, resulting in great appeal for multinational companies.

(5) Providing advanced and independent technology support of ICTs

In order to further assist the development of e-commerce, the Irish government enacted a series of measures specific to indispensable technology support of ICTs, including: the establishment of ICT development projects based on networks, the founding of professional ICT consultation institutions, setting up ICT and e-commerce development institutions to track and promote enterprises' development, setting up relevant statistics organizations according to the usage of ICTs to follow and investigate in due time and provide reports to the EU, and to coordinate with international and European laws about ICTs.

(6) To satisfy the demand of e-commerce talents through two channels of recruiting and training

The government sets policies to recruit overseas talents of high quality to work in Ireland, especially welcoming Irish youth who have once studied or worked in the USA and European continent to return home and create their own careers. To foster e-commerce talents, investments in Irish universities are increasing. To improve electronic management skills and the applications, necessary ICT data management training courses and professional management training lessons are offered with related degree certificates or post graduate certificates.

(7) Encourage enterprises to take exports as the center, strive to develop e-commerce and make Ireland the world's e-commerce center

Since Ireland is a country with a small market and a small population, limited chances would exist to carry out the Irish grand plan of a global e-commerce

center if taking the domestic market as primary market. Learning from software development experience, the Irish government has formulated the e-commerce strategy focusing on exports and international markets. In practical work the Irish government matches its words with deeds by applying e-procurement, which means to design and manage software and systems used for management, transmission and exchange for the purpose of simplifying procedures and reducing standards, so as to facilitate SMEs' efficiency and service. This not only improves the demands of IT technologies, strengthens the price and service competitiveness, but also increases export opportunities.

2.8.5 Implementation Achievement of E-Commerce Strategy

Evolving from the software strategy, the long-term effect of Irish e-commerce strategy still needs to be further observed. It is hard to predict at present whether e-commerce can win a continual competitive advantage and bring economic recovery to Ireland after suffering the financial crises. So far, Irish e-commerce strategy has made some satisfactory achievements that indicate subsequent success in the future.

Apart from having invested the transportation and telecom infrastructural fund valued at billions of dollars to support the development of e-commerce, the states have also gradually completed the transformation of a traditional state-run monopolized telecom industry into current liberalized privatization for the sake of improving the service level of e-commerce. Connecting with main cities in Europe and North America, nowadays Ireland is ranked fourth in the list of broadband network nations. In Ireland, the broadband network covers the whole nation. The number of netizens expands day by day, and Internet penetration climbed from 20% in 2000 to 60% in 2009. The postal department can easily provide e-payment transactions and e-commerce certifications.

Among all the fruits gained from Irish e-commerce strategy, the call center is a very successful one. The main function of the call center is telemarketing, technology and client support of computer software and hardware, reservations and customer services of airlines, hotels and other accommodation, etc. Lots of international companies build their remote sales base and remote support center in Ireland making use of advanced telecommunication technology and locally manufactured software. Ireland has now become an undisputed leader within the calling field of Europe. Over 60 telecommunication operators choose Ireland as a new European calling base. In order to provide multi-language service to European and worldwide customers, 24 hours a day, 365 days a year, these global operators hired more than 7,000 people to handle business ranging from customer consultation, orders receipt and technical support to the commercial activities in European areas.

At present Ireland leads Europe in the development of e-commerce. According to Eurostat statistics published in the most recent issue of State of the Net report in

March 2010, turnover of e-commerce outlets accounts for 26% of enterprise turnover in Ireland. It is the highest percentage in all 27 countries of the EU, followed by Finland and Sweden (both 18%), Czech Republic, Britain and Germany (15%). The overall EU average is 12%. Within the first quarter of 2010, 29% of Irish online shoppers bought or ordered goods and services from the Internet. It is worthwhile to note that the majority of the transactions were made with companies from outside Ireland; 62% of the e-commerce turnover was received abroad (39% in another EU state, 23% outside the Union)^[50].

2.9 Singapore

2.9.1 Overview of Singapore

Singapore is an island country, consisting of 63 islands including the mainland of Singapore occupying 88.5% of the whole land area and 62 islands nearby^[51]. The territory of Singapore is very small so that there are not so many resources for Singapore to develop resource-intensive industries. But Singapore is adjacent to the Straits of Malacca. Meanwhile, it is separated from Malaysia by the Straits of Johor to its north and from Indonesia's Riau Islands by the Singapore Strait to its south. Singapore has great geographic advantages and Singapore is very open and diversified. There is little limitation in finance, international trade and so on. The traditional economy of Singapore mainly depended on business including entrepot trade, export processing, shipping and so on. After independence in 1963, the Singapore government insisted on free economic policy to attract foreign direct investment and create a diversified economy. In the early 1980s, Singapore initiated a state-led drive for industrialization focused on capital-intensive and high value-added fledgling industries, and meanwhile spent a lot of money on infrastructure construction to perfect the domestic business environment. In the 1990s, particular attention was paid to the information industry which was marked by the announcement of *Singapore ONE* in June 1996. In order to further stimulate economic growth, Singapore vigorously carried out the "Regional Economic Development Strategy" and actively developed foreign economic activities. Singapore, known as one of the Four Asian Tigers along with Hong Kong and Taiwan of China, and Republic of Korea, has a highly developed market-based economy since independence. Now Singapore's economy mainly relies on five industries including commerce, manufacturing, construction, finance, transportation and communications. Meanwhile, due to geographic advantages and well developed transport infrastructure, Singapore has the world's second busiest free port, second to Hong Kong of China and is the world's fourth largest foreign exchange trading center after London, New York and Tokyo.

Singapore was the third wealthiest country in the world in terms of GDP (PPP) per capita (established by IMF, 2010)^[51], and the 39th wealthiest in terms of GDP

(nominal) reaching \$222,699 million (established by IMF, 2010) ^[52]. The total foreign trade volume was \$747,417 million, over three times GDP (nominal). The European Union, Malaysia, China and America are the major trade partners.

2.9.2 Strategic Background

Singapore has a high level of informatization and was one of the world's earliest countries to develop e-commerce. Because Singapore is very small and lacking resources, the people in Singapore are very active and sensitive to the changing environment. In addition, Singapore is very open and the people there are all willing to change. Meanwhile, the trend of Global Economic Integration also initiates a vigorous driving force for the development of e-commerce. Prior planning, legislative lawmaking and government-led promotion can be summed up as the main characteristics of Singapore's developing process.

While formulating national strategic planning, the Singapore government, with extreme foresight, announced a national trade network project in 1986. As a part of national info-highway construction, the Singapore Trade Development Board (renamed as International Enterprise Singapore in April 2002) made great efforts to develop the Electronic Data Interchange (EDI) System and launched the world's first nation-wide EDI network named "TradeNet" in 1989 which was used for comprehensive processing of business files. The TradeNet was composed of various sub-systems like trade network, manufacturing network, retail network, transportation network and financial network system. 95% of import and export trade in Singapore is dealt with by EDI. It is reasonable to say that TradeNet was the beginning of Singapore's e-commerce based on the Internet. Then the Singapore government launched "MediNet" for medical affairs and "LawNet" for legal issues, which made important contributions to guarantee security during e-commerce development.

At the beginning of the 21st century, the Singapore government recognized that the foundation of economic principal sectors would change; a broadband digital communication network and advanced information technology would become the new impetus to economic growth. From the 1980s Singapore successively established a series of national strategies to promote the information industry and began to lay a high-speed communication network throughout the country from the late 1980s for the purpose of popularizing computer applications. The construction of information and communications infrastructure was regarded as a vital aspect of national economic strategy, and was the key to success in informatization as well.

For more than 20 years, with the government's support, Singapore has been focusing on the development of the information industry and actively building an information infrastructure. Singapore has constructed as an e-commerce center in the Asia-Pacific region, known as a miracle of informatization. Founded in 1980, the National Computer Board put forward the first five-year plan entitled *Civil*

Service Computerization Program (1981) which hoped that through the implementation of the plan, paperless transaction and automation of government and enterprises would be realized so as to improve the work efficiency and service quality of government departments when handling public administrative affairs. Based on a prior plan, *the National IT Plan (1986)* for the second five-year plan emphasized the usage of network technologies; it encouraged using data fusion and data interchange to deepen the computerization of public administrative affairs, and encouraged private enterprises to participate in this work. After that, *IT2000 (1992)* was implemented to build a high-speed multimedia network within 10 years, to popularize information technologies and to build a widely connected electronic society in regional and global areas, which would create the vision of a “wired island”. In June 1998, the Singapore government launched *Singapore ONE* throughout the island which would provide 200 interactive services including multimedia format, connect the island to the Internet by optical fiber, and provide a high-speed access to over 80 countries by three international digital telephone networks, three satellite transmission stations and seabed cables and pipelines. In order to encourage all the industries to set up online agencies, Singapore established *e-Business Industry Development Scheme* in September 1999 derived from *Local Enterprise Electronic Commerce Program*. In 2000, five agencies of the Singapore government took the lead, two of which merged to form the Infocomm Development Authority that expressed *Infocomm21* ^[52] aiming at becoming “the first-class economy” by 2005 in the network era. In June 2006, the government announced *the Intelligent Nation (iN2015) Masterplan* with the vision of being An Intelligent Nation, A Global City, powered by Infocomm ^[53] with the objective to strengthen Singapore’s global economic competitiveness in the next ten years through a series of activities beneficial to the public, enterprises and global society. After the *iN2015*, Singapore implemented the Next Generation National Broadband Network (NBN), which referred to a national FTTH network with the highest speed of 1Gbps. This plan expected that by 2012 the NBN coverage rate of families and offices would achieve 95%, and 100% by 2013. As the supplement of wired broadband, the Singapore government expressed *Wireless@SG* (2006).

According to the statistics report of Infocomm Development Authority of Singapore (IDA), Singapore’s information industry revenue increase by 8.9% in 2005, 19.9% in 2006, 13.8% in 2007 and 12.4% in 2008. Its annual revenue reached 62.74 billion SGD in 2009, increasing by 66% compared with that in 2006 while the export earnings increased 83% to 40.4 billion SGD in 2009 from 22.1 billion SGD in 2005. At present, Singapore has over 7,500 national wireless network pots covering airports, shopping centers and business districts, and more than 1.3 million customers, of whom 0.42 million use the network more than three hours per month on average.

2.9.3 Strategic Orientation

The strategic orientation of Singapore's e-commerce strategy is to develop Singapore into a universal e-commerce central pivot, to build an e-commerce popularized new economy, and eventually to ensure the competitive power of Singapore in the new economic environment.

2.9.4 Detailed E-Commerce Strategy

When information technologies stepped into the e-commerce stage, the Singapore government formulated its e-commerce strategy as soon as possible according to the constantly changing strategic environment. In August 1996, the Singapore government launched *The Electronic Commerce Hotbed Program*, of which the purpose was to develop e-commerce laws, technology infrastructure and e-commerce services. Soon afterwards, the Singapore government took lots of measures including establishing the first authentication institution "Netrust" in Southeast Asia to provide the government agencies and suppliers with identity authentication and signal transmission Security Service; to found Electronic Commerce Policy Committee in 1997 in charge of discussing and planning all e-commerce relevant laws and policies ^[54].

In 1998, the Singapore government launched a more comprehensive *Electronic Commerce Master Plan* to solidify the e-commerce central position in the world based on the traditional advantage of international trade, global financial services, telecommunications and information. The program planned to increase the application proportion of e-commerce by up to 50% and the volume of e-commerce products and service business by up to 4,000 million SGD.

The strategic contents of *Electronic Commerce Master Plan* are to develop an e-commerce infrastructure consensus to the internationality standard, quickly build Singapore into an e-commerce center, encourage and support enterprises to strategically adopt e-commerce, to promote e-commerce activities in the public domain and business areas, and to make e-commerce laws and policies appropriate for transnational trade. In consideration of its own e-commerce development plan in multinational companies, the promoting policies are generally specific to local enterprises, SMEs in chief, with much attention on the credit, security and legislation of e-commerce.

To conclude all the above policies, the e-commerce strategy of Singapore could be described as follows:

(1) Distinguish content or application service providers from pure information publishers or web content creators

The latter were channels suppliers who enjoyed exemption from liability for customers' information. This strategy would boost the development of the data center in Singapore.

(2) Open the telecoms industry and its policy regulation in an all-round way to

build advanced e-commerce infrastructure in line with the world level

Multiple Broadband Wireless Access Technology (LMDS) and 3G licenses were issued, and then the policies and regulations were adjusted to accommodate to new economic development. The government changed the early auction regulations so that it was unnecessary for anyone who wanted to host an auction, no matter in the traditional form or online, to obtain the auctioneer qualified certification. Additionally, the government formulated laws and policies of security and privacy protection.

(3) Assist corporations to engage in e-commerce activities

All sorts of existing plans were utilized to extensively help SMEs foster e-commerce capabilities. The Singapore government provided multiform convenient financial assistance schemes such as *Local Enterprise Finance Scheme (LEFS)*, *Business Development Programme*, *Local Enterprise Technical Assistance Scheme (LETAS)*, *Workfare Training Scheme (WTS)* and *Research Incentive Scheme for Companies (RISC)*, and sharpened enterprises' awareness of the efficacy of e-commerce in improving competitiveness and productivity. The easy-to-use transaction platform and mode were provided specific to SMEs who were interested in online transactions to assist them to reduce risk and increase the investment efficiency in e-commerce strategic plans. Since another plan *Infocomm@SME* was promulgated, over 1,500 SMEs obtained 2,000 Singapore dollars when they exploited their first web site. At the same time, the government encouraged cooperation with SMEs and existing websites to develop online business. E-society is underway focusing on trade and transactions, manufacturing and logistics, finance and banking. Furthermore, Singapore, together with the dealers, will set up a comprehensive E-learning infrastructure, supported by the "E-learning Standard Committee".

(4) Improve confidentiality and security of the network and enhance the consumers' confidence in online shopping

To achieve this goal, both consumer education and business education were introduced, followed by the review of individual privacy and security policies and the implementation of a "trusted symbol" to retail sites. The government will also spread the concept of the new economy by publicity activities, workshops, training and so on to ensure the smooth implementation of the enterprise-level e-commerce strategy. From the technological point of view, because of the small size and population, Singapore has fewer advantages in the research of security and encryption technologies than western developed countries and Japan. As a result, Singapore mainly adopts the existing technologies in this aspect, attached to powerful legal protection.

(5) The government will set up commercial centers abroad to strengthen the e-commerce strategic cooperation with foreign countries and help local companies develop electronic business. What's more, the government will keep on striving to attract world-class e-commerce companies to establish network pivots in Singapore, so that they can align with local companies more easily.

(6) Cultivate IT talents as a human resource reserve for the development of e-commerce

The Singapore government realized the importance of talents in the process of realizing the prospect of being An Intelligent Nation. Therefore, under the guidance of *Infocomm21* and *iN2015*, Singapore endeavored to develop world-class colleges, to improve the curriculum system, to attract and to retain international talents, to cultivate the technological elite, to advocate lifelong learning and to increase the quantity and quality of human resources. According to the investigation and statistics by IDA, until June 2008, the number of Singapore's IT talents had reached 139,000, of whom 71% were under 39 years old and 82% were university graduates or above ^[55].

The Singapore government attaches great importance to its role in the development of e-commerce. The Singapore government recognizes that e-commerce could not develop so fast without official supervision to some degree, just like trade without rules is dangerous. In the future cyber world which is full of competition, the government should provide services at the soundest price rather than monopolized management to attract talents and investment, which will finally contribute to national economic growth. The government in cyber space is no longer a fixed entity, but a service supplier in the competition.

E-commerce activities in Singapore are all controlled by the government. A total funding of \$2 billion has been invested to establish a system in which all students can accomplish most learning tasks. In recent years, the Singapore government has been emphasizing the importance of information technology, and has spent a large amount of money on the preparations for the coming Internet era, including carrying out *Infocomm21* at school and the launching of *Singapore ONE* mentioned above. One goal of *Singapore ONE* is exactly to promote the national e-commerce level and let Singapore citizens grasp related e-commerce knowledge in order to maintain its business competitiveness.

In implementing the *Intelligent Nation (iN2015) Masterplan*, three important programmes driven by IDA were highlighted as the nation continues to take advantage of buoyant regional growth to drive its infocomm technology (ICT) agenda forward. They are the National Authentication Framework (NAF) which will strengthen the infocomm infrastructure for next generation ICT users, trade and logistics and the Digital Concierge Programme which aims to catalyse the growth of the mobile services ecosystem in Singapore.

- From the perspective of e-commerce, IDA views NAF as a critical programme to increase popularity and pervasiveness of e-transactions including e-banking and e-commerce. It (NAF) will be set up to provide a nationwide strong authentication platform to enhance the security of online transactions for government, businesses and consumers.

- To transform the trade and logistics industry, IDA is working on integrating key trade and logistics business processes through TradeXchange® (Fig. 2.15). Four consortia involving 22 companies were awarded a Call-For- Collaboration (CFC) to integrate key processes in marine cargo insurance, freight management and trade financing through TradeXchange®. A total of \$6.3 million will be co-invested by industry and government to implement these three integrated processes.

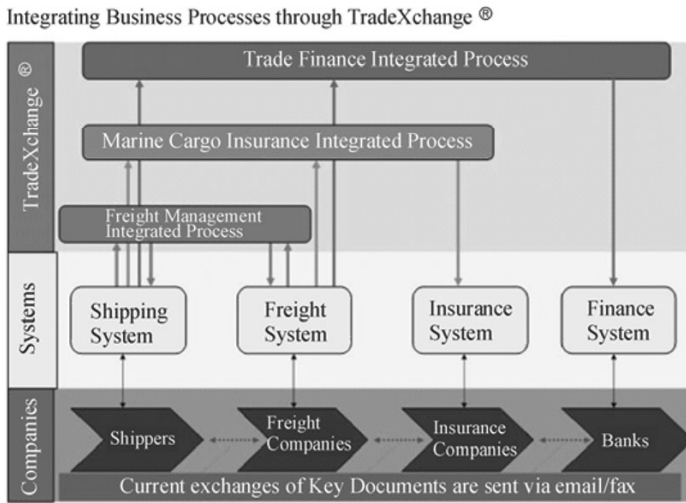


Fig. 2.15 Integrating Business Process through TradeXchange®
(Source: Infocomm Development Authority of Singapore, IDA)

“With the integration of key processes that bring about the timely exchange of information, companies will enjoy greater operational efficiencies, better visibility, and faster turnaround”, said Mr. Loh, Siang Kiang, Assistant Director, Finance, Tourism, Trade and Manufacturing Cluster, IDA.

- The Digital Concierge programme encourages businesses to make use of the mobile channel to contact their customers more pervasively and to accelerate the development of transactional and innovative mobile services like ticketing, taxi booking, remote paying and virtual goods delivery. It will make a great contribution to the development of e-commerce, particularly M-commerce.

The Singapore government pays much attention to e-commerce legislation. Soon after the *UNCITRAL Model Law on Electronic Commerce* was issued in 1996, Singapore began its e-commerce relevant legislation research and drafting. On 10 July 1998 *Electronic Transactions Act (ETA)* was enacted to solve specific problems in e-commerce transactions, such as the accreditation and regulation of telegraph text and electronic signature, the responsibility of network service providers, the encryption and use of electronic contract and computer data. Because of the *1998ETA*, Singapore became one of the earliest nations which have formulated and adjusted e-commerce laws in civil law system, and was widely acknowledged as a world leader in laws relating to e-commerce. The *1998ETA* not only made electronic data legal valid and reliable for legal proceedings, but also stated that any trade data should be kept 11 years for future reference, which took the lead in the world.

In order to assure billions of dollars e-commerce market share, Singapore is trying to establish a more comprehensive e-commerce legal system. After the *ETA*, Singapore released *Legal Guide to the Electronic Transactions Act, Security*

Guidelines for Certification Authorities, Electronic Transactions (Certifications Authority) Regulations 1999 and *Guidelines for Preparing Certification Practice Statement* implemented by relative organizations at the basic level to match the *ETA*. The official agency, Certificate Authentication, is responsible for issuing digital certificate to e-commerce customers as a faithful third party. Except for all documents about CAs, the Singapore government also enacted and ammended the *Computer Misuse Act* which provides heavier sentences for all forms of hackers and virus releasing actions. On May 19 2010, the *1998ETA* was repealed and re-enacted to provide for the security and use of electronic transactions.

In aligning with the *UN Convention on the Use of Electronic Communications in International Contracts (UN Convention)*, IDA together with the Attorney-General's Chambers (AGC), conducted a review of the *1998ETA*, culminating in the *2010ETA* ^[56] and the new framework for electronic transactions which was intended to adapt to the new international environment and science technology level. The new act eliminates the worries for Singapore domestic enterprises to develop global e-commerce, and modified the regulatory framework of CAs so that it is more compatible to new emerging and advanced techniques. In addition, in order to strengthen the convenience of e-government service, the *2010ETA* promised great strides in the design of electronic forms and the legitimacy of electronic materials.

2.9.5 Implementation Achievement of the Strategy

Singapore's e-commerce strategy has made preliminary results in the new economic era. In 2000 Singapore was ranked the first in Asia and fourth in the *World Competitiveness Yearbook 2000*, in terms of e-commerce infrastructures.

The infocomm infrastructure has made great progress in implementing the e-commerce strategy: the global first national broadband network *Singapore ONE* can provide practical interactive multimedia functions and services accessed by optical fiber and CATV network. Thanks to advanced infrastructure and policies, Singapore keeps ahead of many countries in the development of the Internet. Almost all Singapore citizens own the technical facilities and conditions to surf the Internet, and a high-speed broadband network spreads to almost all campus and research institutes. In 2009, about 83% of households in Singapore had at least one computer at home, up from the 74% in 2005. The proportion of households with Internet access increased to 81% in 2009, up from the 66% in 2005. The proportion of households having broadband access had also increased to 80% in 2009 from 54% in 2005 ^[57]. The Next Generation National Broadband Network had covered 35% of buildings in 2009 and will increase to 95% in 2012. From the aspect of enterprise informatization, the proportion of enterprises using computers was 76% in 2009, amongst which 99% in enterprises with 50 – 200 employees and 100% in enterprises having above 200 employees. About 36% of Singapore enterprises had their own websites, amongst which 78% of enterprises

with more than 50 employees, and 90% of enterprises with over 200 employees.

Driven by the *iN2015*, the development of the infocomm industry in Singapore continued to take the lead in Asia. Most recently, the World Economic Forum (WEF) ranked Singapore second in its *Global Information Technology Report 2009-2010* which measured the impact of ICT on the development process and the competitiveness of nations. In the *World Competitiveness Yearbook 2010* released by IMD, Singapore jumped two steps forward and was ranked first. In Singapore, ubiquitous information communication, high popularization of mobiles, broadband, computers and the enterprise network have ensured commercial trade security and attracted more and more multinational enterprises to establish an IT data hub there ^[58].

The Singapore government, who has been supplying positive demonstration and guidance from the beginning to the end of implementing e-commerce, strives to lead the world in e-government, and to realize the transformation of the government using information technologies. In all previous national informatization strategies, e-government was an important component, with the principle of upholding the will and requirements of the general public as the central task. The launching of myTax Portal, GeBIZ, Online Business Licensing Service and TradeXchange brought great convenience to people and enterprises, and also promoted the development of e-commerce and electronic community enormously ^[55]. So far, the main public services of the Singapore government have all been executed online. For the second year running, Singapore also topped the Waseda University World e-Government Ranking, which monitors and analyzes the development of e-government worldwide. The WEF ranked Singapore first in the ranking of e-government readiness index in the *Global Information Technology Report 2009-2010*.

Having been so successful, the Singapore government never slackens. The *iGov2010* vision is to be an Integrated Government that delights customers and connects citizens through the use of infocomm technology ^[59]. At the same time, the IDA is designing the *e-Government Masterplan* for the next stage to establish an electronic government which will adopt a new cooperation mode with private and public sectors based on new technologies so as to coordinate with the social development trend.

Since 1998, Singapore has launched a series of laws and regulations on network information and e-commerce, including the *Computer Misuse Act*, *Security Guidelines for Information Technology*, *Security Guidelines for Certification of Authorities*, *Electronic Transactions Act*, *Legal Guide to the Electronic Transactions Act*, *Electronic Transactions (Certification of Authorities) Regulations*, *Guidelines for Preparing Certification Practice Statement*, *Infocomm Development of Authority of Singapore Act 1999*, *Telecommunication Act 1999*, *Intellectual Property Law*, *Copyright Act*, *Class License Scheme* and *Code of Practice for every trade like Internet Code of Practice*, *Code of Practice for Infocomm Facilities in Building (COPIF)* and so on. Inland Revenue Authority of Singapore issued the *Income Tax Guide on E-Commerce* and the *Goods and Services Tax Guide on E-Commerce*, which expressly set the tax bill currently in

effect as the basic principle of e-commerce transactions, so that enterprises and individuals engaged in e-commerce would understand and utilize the relevant tax regulations better.

As Singapore wants to be an e-commerce hub, an e-commerce dispute resolution infrastructure was necessary. The Singapore government constructed the Electronic Court (E-Court), Interactive Court (I-Court) and the Electronic Chamber (E-Chamber) in primary courts with the latest technologies to establish a comprehensive dispute resolution framework for e-commerce cases. E-justice lab@subcts, an experimental laboratory, was set up to allow judges, court staff, lawyers and leading infocomm technology vendors and developers of hardware and software to field-test cutting-edge technologies with potential for court-related uses, for the benefit of the justice system^[60].

On Apr 14 in 2010, E-Commerce Association of Singapore (ECAS) has signed up as a Channel Partner of PayPal. With this development, local online merchants can add PayPal as a payment option to their shopping carts or online payment modules and enjoy special promotions. With e-commerce growing quickly in Asia, PayPal is committed to supporting the phenomenal rise of online payments in Singapore, as well as around the globe^[61].

2.10 Republic of Korea

2.10.1 Basic Conditions

Republic of Korea (ROK) is a developed country in East Asia with a high standard of living^[62]. It was Asia's fourth largest economy and the world's 15th (nominal) or 12th (purchasing power parity) largest economy with nominal GDP of \$986.26 billion in 2010.

Republic of Korea lacks natural resources so that most of the materials and fuels have to be imported. As a result, Republic of Korea can not reach fast development just by traditional industries such as agriculture and extractive industries. The development of Republic of Korea has experienced various stages. In the 1950s, the ROK's economy recovered from the edge of economic depression. In the 1960s, Republic of Korea released an export-oriented economic development strategy and launched the first five-year economic development plan. After the successful implementation of the export-oriented economic development strategy, Republic of Korea joined newly-emerging nations in 1970s. Republic of Korea had been a competitive country in the international market in the 1980s and set being a developed country as the development goal in the 1990s. Now Republic of Korea has become one of the developed countries mostly dependent on exports, especially focusing on electronics, automobiles, ships, machinery, petrochemicals and robotics. Moreover, Republic of Korea has great advantages in the automobile and ship industries. The production capacity of the ROK's

automobile industry was 3.2 million units in 2002, ranking it 6th in the world, while the total tonnage of the ships that Republic of Korea manufactured was 7.59 million, ranking it first in the world. A highly developed transportation industry provides a good foundation for e-commerce, especially in logistics. Meanwhile, the electronics industry of Republic of Korea is one of the world's ten top electronics industries with fast development in semiconductor integrated circuits. The government has paid a lot of attention to the information technology industry and constantly increased the investment in the information technology industry. Now, household appliances, mobile phones, notebook computers, computer monitors and other electronic products produced by ROK's firms have a strong competitive edge in the international market. Republic of Korea is one of the most developed e-commerce countries in the world and its broadband coverage ranks in the top 3 in the world. This provides the infrastructure to develop e-commerce in Republic of Korea. Meanwhile, e-government in Republic of Korea has also developed well.

2.10.2 Background to ROK's E-Commerce Strategy

As a country lacking in natural resources, Republic of Korea has been trying to develop its economy in other ways. In the 1960s, through successful implementation of an export-oriented strategy, the economy of Republic of Korea achieved rapid development. Meanwhile, Republic of Korea is a nation good at self-study and self-improvement. During the "Third Revolution," as the innovation in IT was dubbed, Republic of Korea realized the development of information technology would be the trend in the future and invested a great amount of money and human resources in the information technology industry.

The Internet has been widely disseminated at a rapid pace in Korea thanks to a vastly increased distribution of computers and the growing number of PC communication subscribers since the late 1980s, which provides Republic of Korea with the requisite infrastructure to propel the growth of the Internet. In particular, broadband networks such as the cable Internet and satellite Internet are growing exponentially, which enables users to gain faster and easier Internet access to high-quality and huge quantity content. Based on this new economy-based Internet and knowledge infrastructure, industrial efficiency has been enhanced and various forms of e-commerce have been facilitated, which leads to the creation of new business, to strengthen global competitiveness and also raises living standards.

Meanwhile, some of the same traits that promoted ROK's manufacturing miracle during the 1960s and 1970s sparked this Internet boom. In Republic of Korea, business trends operated like a switch, which meant when the economy took a new direction the switch would happen immediately. There was no in-between setting. This aggressive "go-for-broke" mentality was a key feature of Korea's earlier manufacturing revolution. People in the Republic of Korea all

determined to keep up with their friends and neighbors, stimulating consumption of personal computers (PC) and Internet services^[63].

In addition, the 1997 economic crisis was one of the most important factors that contributed to the Internet fervor in Republic of Korea. Because e-commerce could enhance the overall economic effectiveness, increase firms' competitiveness, increase the efficiency of resource allocation, and promote economic development in the long run, e-commerce was seen as one of the key elements in an industrial restructuring scheme to enhance the competitiveness of firms by the ROK's government. Although these positive impacts had not been verified completely, e-commerce made some enterprises survive in 1998 and 1999.

In the process of e-commerce development in Republic of Korea, the government has played an active role in promoting e-commerce in the public and private sectors. The government departments in charge of e-commerce are the Ministry of Information and Communication (MIC) and the Ministry of Commerce, Industry and Energy (MOCIE). The MIC has the power to grant or revoke telecom licenses. The ROK's Communications Commission (KCC) under the MIC is responsible for the following tasks: deliberating issues about fair competition and consumer protection in the telecoms industry, arbitrating disputes between telecoms service providers and users, and enforcing corrective measures and imposing fines on unfair competition practices. Because the responsibility between the MIC and the MOCIE sometimes overlap, there is a collision of interests over major policy issues. The Informatization Promotion Committee under the prime minister also provides policies in terms of setting broad policy directions and agendas. The ROK's Institute for e-commerce (KIEC), established in 1999, facilitates government-industry co-operation in developing local e-commerce infrastructure and sets internationally consistent standards. The KIEC also operates as a dispute-resolution organization and promotes e-commerce workforce-development programs. The central electronic-government website, www.egov.go.kr, offers many types of public services online. Government procurement, taxation, and fiscal and payroll management are also based on information technology. Government procurement is a driving force behind the growth of government-to-business (G2B) e-commerce. The government's central G2B platform (www.g2b.go.kr) offers extensive e-commerce opportunities to domestic and foreign businesses. The government also develops an Internet portal catering to the needs of foreigners in Republic of Korea, including foreign investors and expatriates^[64].

2.10.3 Orientation of ROK's E-Commerce Strategy

Republic of Korea began the economic take-off in the 1970s, and created the world-renowned "Miracle on the Han River". Since the 1990s, electronics and appliances have always been the pillar industry in Republic of Korea. In the late 1990s, the main industry in Republic of Korea reached maturity. But ROK's

economy faced many problems, such as slower economic growth, severe challenges of weaker international competitiveness and the traditional ROK's economy suffered in the Asian financial crisis. All of the above prompted the ROK's government to realize that the 21st century was a knowledge and information era and they should vigorously develop the digital industry. The ROK's government grasped the developing opportunity in time, and devoted itself to the development and application of information technology. Meanwhile, developing e-commerce is the priority. Owing to low costs and efficient transactions of e-commerce, the government of ROK deemed e-commerce as an effective means for re-engineering the industrial structure and strengthening competitive advantages of ROK's companies to promote ROK's overall economic development.

2.10.4 ROK's E-Commerce Strategy

In order to compete in a unified global market, businesses all over the world are involved in life-or-death rivalry, and the EU and other nations such as the United States and Japan are engaged in a fierce contest to take the lead in e-commerce. Under these circumstances, the ROK's government is endeavoring to come up with industrial policies related to e-commerce.

The development of e-commerce in Republic of Korea formally started in the early 1990s. The government launched the *Basic Act on E-Commerce* in 1999, *Comprehensive Policies for E-Commerce Development* in 2000 and *E-Business Initiative in Korea* in 2001 respectively. In June 2002, President Kim Dae-jung hosted a national strategy meeting to promote e-commerce development, focusing on the present situation, the implementation of relevant research, and future direction of e-commerce development. Now let us just take a look in detail at the contents of ROK's e-commerce strategy.

(1) Enacting and revising the relevant legal system

Enacting and revising the relevant legal system such as the enactment of the *Basic Act on E-Commerce*, *Electronic Signature Law* and *Consumer Protection Law*, the revision of *Copyright Law* and *Contract Law*, the foundation of the national e-commerce credit system, the enactment of law on protection of the right of privacy on the Internet and intellectual property. In addition, it is necessary to establish the propulsion system of government informationization for promoting the development of informationization, and the framework of government informationization for instructing its development.

(2) Developing e-commerce infrastructure construction vigorously

Develop e-commerce infrastructure construction vigorously, renewing the national communication network, and enhancing the speed of the super high-speed backbone network. The Internet speed has reached over 400Gbps and the capacity of ATMs has been expanded. Meanwhile the government has increased the funding and policy support to standardized development of EB-XML, the

application and integration technology of e-commerce, e-commerce human resources development, logistics services and so on. The research in e-commerce technology should be strengthened to promote the standardization of e-commerce.

(3) **Comprehensively promoting e-commerce in various industries**

Build “e-government” to automate document processing, meetings, financial management, government procurement, tax, legislation, judicature and local public information. Build an agricultural e-business infrastructure by setting up farmer websites and a comprehensive online store of agricultural products. The government invested 19.25 billion ROK’s won (KRW) to 28 industries for building a B2B basic trade platform. The government e-procurement system and electronic payment systems also should be opened up. Promote the informationization of small and medium-sized enterprises. It can be firstly conducted in four demonstration industries such as electronics, automobile, national defense procurement, construction industries, and then extended to the steel, shipbuilding, heavy industry, railway trains and other industries, then further extended to all industries.

(4) **Promoting the ASEM e-commerce multilateral cooperation agreements**

It includes the signing of an information agreement, the establishment of “the agreement of entry into overseas markets of e-commerce” and the “global e-commerce support center”, etc. Encourage the use of electronic money, electronic signatures, and electronic transactions. Establish a series of supporting projects from the acceptance of orders, product delivery, to ensure supplies, financial payments, information exchange, quality assurance, safety insurance for fostering e-commerce market.

2.10.5 Measures

(1) **Laws**

➤ Revise the legal system that may restrict the development of the digital economy such as *Commercial Law* and *Securities and Exchange Act*.

➤ Increase the integration of relative e-commerce laws to electronic signature, electronic settlement and electronic documents.

➤ Enact and revise the fundamental laws to prompt the development of e-commerce such as copyright law.

➤ Strengthen the rewards and punishment mechanism of e-commerce to support the development of enterprises in tax, education, information and capital.

➤ Strengthen consumer protection and formulate relative laws.

➤ Establish an online intellectual property rights protection bill and revise the Trademark Law and the Anti-Unfair Competition Law, etc.

(2) **The infrastructure**

➤ Invest 155 billion KRW to establish the super-high speed communication network and extend the fiber communication network. The backbone network based on VSDL and Wireless LAN are planned to be popularized.

- Focus on the development of the basic technology of e-business and formulate the development plan of e-commerce.

- Standardize e-commerce by focusing on the specification of e-commerce and EBXML.

- Create a proper training environment to cultivate global senior e-commerce talents.

- Improve e-settlement, expand the support for e-commerce, guarantee and develop online bond transactions.

- Strengthen the construction of logistics facilities such as SP-IDC and the commodity base.

- Improve the development of e-learning.

(3) The industry

- Improve the infrastructure of e-commerce in all industries and strengthen the integration among industries.

- Support the informatization of SMEs and improve the popularization of ASP in all industries.

- Develop mobile e-commerce and establish a global mobile e-commerce center.

- Strengthen enterprises' competitiveness by improving the specification and focus on their main businesses.

- Promote the application of e-commerce in non-manufacturing industries such as pharmaceuticals, agriculture and the construction industry.

- Strengthen the leading role of public sectors especially government procurement.

- Popularize e-commerce by prompting best practice in e-commerce.

(4) The globalization

- Establish an e-commerce network based on the Internet.

- Strengthen the cooperation under the multilateral mechanism of ASEM and OECD.

- Expand bilateral cooperation.

- Establish the supporting center for e-commerce solutions to support the development of services for exports, such as marketing, consultancy and testing.

Although there is still no mature operation mechanism for e-commerce in Republic of Korea, Republic of Korea has achieved great improvements. Compared with strategies of other countries, there are some obvious differences. The first is that the strategy is very concrete, which is easy to implement. The second is the government's high support. The president has conducted meetings to discuss e-commerce strategy and applications. The last is that the strategy has an obvious direction and has launched concrete solutions to key problems.

2.10.6 Current Situation and Prospects

- The infrastructure

Republic of Korea has the world's highest number of broadband services per capita. ROK's broadband market is represented by cable modem, DSL, Fibre-to-the-Home, WLAN, WiFi, Broadband Wireless Local Loop, broadband via satellite and anticipated WiBro. In addition, Republic of Korea has the cheapest, fastest broadband in the world. In 2009, most apartments and houses had the capacity to subscribe to 100 Mbps Internet connection for 33000 KRW (\$30) or less, depending on the contract period. So far, there are no limits to these services. The high speed of Internet connection is mainly offered by three major companies—LG, KT and SK. Currently experiments with a speed of 1 Gigabit per second have been accomplished.

With widespread and fast speed of broadband in Republic of Korea, the Internet is widely used all over Republic of Korea. More than 92% of ROK's households have access to the Internet which makes Republic of Korea rank among the top countries in the world for Internet usage and broadband penetration. Meanwhile, with the growth of Korea's high speed infrastructure and the new government's initiatives to promote digital convergence, the demand for e-commerce transactions and broadband is increasing. In Republic of Korea, people are used to the Internet. Everyone from elementary school, children to grandmothers, are getting online, making Korea one of the world's fastest growing Internet markets. By early 2009, over 30% of the population and nearly 85% of households were broadband subscribers, and Internet penetration rate in the country was over 77%. This may be compared to the year 2000 when only about 40% of Internet users were connected, while it was over 66% of Internet users in 2006.

- E-commerce Laws

E-commerce laws and regulations are fundamental for the development of e-commerce. There are two basic e-commerce laws: 1) the *Basic Act on Electronic Transactions* and 2) the *Electronic Signature Act*. These laws were implemented in 1999, broadly defining how e-commerce is regulated and online market transactions should be handled legally in Republic of Korea. The *Basic Act on Electronic Transactions* is recommended for ROK's e-commerce regulations including consumer privacy protection. For example, online dealers are not allowed to use or give access to third-party personal information received through e-commerce unless they have obtained the consent from the customer. The purpose of the *Electronic Signature Act* is to achieve the security of electronic documents by placing a computerized signature on authorized documentation. It gives business people the opportunity to interact with a wide variety of clients in other countries and the convenience of authorizing documentation generated through electronic means. In 2002, the *Electronic Signature Act* was amended so that it could match different forms of electronic signatures that are now being accepted in Republic of Korea. Such digital forms include fingerprint, voice, and iris recognition.

In response to several privacy infringement cases in recent years, the ROK's government announced measures for increased privacy protection through implementing the "Comprehensive Information Protection Plan". Relevant previously established regulations under different ministries were integrated into

one new law called “*Personal Information Protection Act*” which restricted the use of personal information within the e-commerce market. In order to solve e-commerce disputes, the Electronic Commerce Mediation Committee was established under the Korea Institute for Electronic Commerce with the law on the promotion of Utilization of Information and Communication Networks and the Protection of Data.

- Statistical data

a. Number of high-speed internet service subscribers (September 2008) (Table 2.5)

b. E-commerce transaction revenues (Table 2.6);

c. Web site rankings by category (Table 2.7).

Table 2.5 The number of high-speed internet service subscribers (Unit: persons)

Service providers	xDSL	HFC	Apartment LAN	FTTH	Satellite	Total	Share
KT	3,489,889	N/A	2,087,521	1,176,092	525	6,754,027	44.2%
SK Broadband	293,883	1,623,280	1,127,454	397,921	N/A	3,442,544	22.6%
Dreamline	6	250	215	N/A	N/A	471	0.0%
LG Dacom	763	9,714	27,631	N/A	N/A	38,108	0.2%
LG Powercomm	N/A	876,562	1,167,492	N/A	N/A	2,044,054	13.4%
Cable TV	55,206	2,505,985	213,390	67	N/A	2,774,648	18.2%
VAN Service& Resellers	24,967	39,328	146,660	110	N/A	211,065	1.3%
Total	3,864,720	5,055,119	4,770,363	1,574,190	525	15,264,917	100.0%
Share	25.3%	33.1%	31.3%	10.3%	0.0%	100.0%	

(Source: Korean Communications Committee (KCC), September 2008)

Table 2.6 E-commerce transaction revenues (Unit: thousand USD)

Transaction category	2006		2007		Comparison 2006 vs 2007	
	Revenue	Rate	Revenue	Rate	Revenue	Rate
E-commerce total	413,584	100%	516,514	100%	102,930	24.9%
B2B	366,191	88.5%	464,456	89.9%	98,264	26.8%
B2G	34,435	8.3%	36,801	7.1%	2,366	6.9%
B2C	9,132	2.2%	10,226	2.0%	1,094	2.0%
C2C	3,826	0.9%	5,032	1.0%	1,206	31.5%

(Source: National Statistical Office, Statistics on E-Commerce Transactions, March 2008)

Table 2.7 Web site rankings by category

Rank	Portals	Entertainment	Shopping malls	News media	Gaming
1	Naver.com	Pandora.tv	Auction.co.kr	Joins.com	Hangame.com
2	Daum.net	Gomtv.com	Gmarket.co.kr	Moneytoday.co.kr	Netmarble.net
3	Cyworld.com	Mncast.com	Interpark.com	Chosun.com	Nexon.com
4	Nate.com	Newsen.com	11st.co.kr	Sbs.so.kr	Gameangel.com
5	Empas.com	Mgoon.com	Gseshop.co.kr	Hankooki.com	Migame.tv

(Source: ROK's Click, October 2008)

- Future tasks

- a. International market

The domestic market may be too small to attain sufficient economies of scale for ROK's online suppliers to earn enough profit. This is in contrast to US suppliers, who already have a sufficiently large domestic market to achieve potential profits. To counter this problem, e-commerce companies have started to target potential markets not just in Republic of Korea but further overseas—in Asia and the industrially advanced countries. In order to achieve the goal, enterprises must overcome difficulties such as the language and cultural barriers, potential obstacles including efficient distribution mechanisms, multilingual and multi-tribal cultures, lack of efficient online payment systems, and inexperienced third-party logistics providers.

- b. Common standards

Republic of Korea must adopt common standards used by other nations or be innovative enough to create standards that all other countries are willing to follow. In the era of globalization, a common standard is necessary. Without it, it may face a lot of obstacles and cause dispute when making an international deal for ROK's enterprises. Once adopting the common standard, both parties can follow the same regulation which would pave the way.

- c. IT development

The development of information technology is essential for e-commerce development. Although Republic of Korea has competitive advantages in the infrastructure, it still needs to develop information technology continuously. Republic of Korea needs to quicken the establishment of IT industrial parks to allow IT related industries to develop. Compared with the Silicon Valley of US, the multimedia valley project in Republic of Korea is still only at the planning stage. To bring forward the completion of such industrial parks, it is critical to encourage the participation of private companies at every phase. In addition, the government should launch incentives and assistance measures to support the development of the information technology industry, not only for those chaebols (ROK's business conglomerates) but also the SMEs. In order to make companies obtain clear and simple answers to basic questions about these government programs, the government also should create a website with an easy to follow explanation of all the available strategies.

2.11 Features of Each Nation

2.11.1 Common Features

Different countries have different e-commerce strategies, because all countries need to formulate their own e-commerce strategy according to their economic, scientific and technical situation, resource allocation, advantages and

disadvantages in e-commerce activities, etc. However, there are some common points as follows:

- Government support

All the governments recognized the importance of e-commerce in the national development and international competition in the future. Every region or country has given attention to the development of e-commerce on different levels and put the development of e-commerce in the national construction schedule, particularly in developed countries. Countries all invest a lot in the e-commerce infrastructure, which is the fundamental of e-commerce development, such as the “information highway” of the United States, “E-Japan” of the Japanese etc.

- E-Government

All the governments developed e-government as a priority. For example, the United States firstly required that all government procurement should be paid online. The Chinese government carried out “Internet Engineering”. The French government asked all the public sectors should take the lead in the development of e-commerce and accelerate the e-government process. Canada also developed E-government as a priority. Moreover, Japan carried out the “*e-Japan*” plan to establish an omnipotent and omnipresent e-government. Meanwhile, Republic of Korea wanted to provide on-line government electronic services in document processing, meetings, financial management, government procurement, taxation, legislation, judicial and so on. Hong Kong of China also planned to establish an e-government and a digital network, etc.

- Enterprises

Implement the “pull from front and push on back” strategy to encourage enterprises to develop e-commerce. The so-called “pull from the front” is to formulate some preferential policies to encourage enterprises to adopt e-commerce technology while the so-called “push on back” is to implement some sanctions or punitive policies to force those enterprises with little enthusiasm to adopt e-commerce technology. In the United States, the Government exempted the tax on e-commerce transactions and provided a priority for the declaration of goods transacted by e-commerce. Meanwhile, the goods sold in a traditional way are often delayed at customs or given some punitive treatment, in order to force enterprises to adopt e-commerce technology. The Ministry of Foreign Trade and Economic Co-operation of China (MOFTEC) also announced in 1998 that foreign trade enterprises would lose the bidding qualification of the export quota if they did not develop e-commerce from January, 2000. Through the implementation of these measures, many enterprises would adopt e-commerce in order to obtain competitive advantages.

- The environment

All the governments committed themselves to create proper environments for e-commerce development. First, clear legal barriers. E-commerce strategies of different countries all emphasized establishing proper legal systems about digital signature, online advertising, intellectual property protection, privacy protection, the protection of consumers’ rights, etc. If these problems were not properly solved, it was very difficult to develop e-commerce. Second, establish a perfect

network. Only when the network is widely spread with fast speed, would it attract more and more people and enterprises to implement the network to carry out transactions. A perfect network was fundamental for e-commerce development. In e-commerce strategies of different countries, the governments all invested a great amount to establish a fast and stable network and tried their best to cover the whole country.

2.11.2 National Strategic Personalities

Differences among the e-commerce strategies of different countries are determined by economic strength, the development level of productivity, science and technology which can all be well reflected by GDP or GDP per capita. Here, all the data of the countries referred to above are summarized as follows (Table 2.8).

Table 2.8 GDP (nominal) and GDP per capita of ten countries in 2010 (USD)

	GDP (million)	Ranking	GDP per capita	Ranking
United States	14,657,800	1	47,284	9
EU	16,282,230	-	-	-
Japan	5,458,872	3	42,820	16
PRC	5,878,257	2	4,382	94
Australia	1,235,539	13	55,590	7
UAE	301,880	33	59,717	5
India	1,537,966	10	1,265	138
Ireland	204,261	43	45,689	12
Singapore	222,699	39	43,117	15
Republic of Korea	1,007,084	15	20,591	33

(Source: IMF database)

E-commerce has its own regularity and objective demands, so there are some common points when different countries develop their e-commerce. However, due to the difference in economic strength, technology, network infrastructure and legal system, different countries will not only have different advantages and disadvantages but also face different problems. Every country should maximize their advantages and avoid disadvantages, and overcome their problems. In addition, governments launched time formal e-commerce strategy at different times because governments realized the importance of information technology at different times. So there are different development situations of e-commerce in different countries. Here, we just made a brief comparison below.

(1) Different attitudes toward hard and soft environment

Many developing countries such as China and India have the heavy task of

network infrastructure construction in their e-commerce strategies. As far as the soft environment is concerned, almost all countries pay attention to the legislation, emphasizing integration with international regulations and customs. In fact, international regulations and customs almost all originated from those of the United States, which can also present the leading power of the United States in e-commerce. In national e-commerce strategies, many countries propose to reduce the Internet fees, especially those developing countries. The Internet fees in most of the developing countries are high, which further hinders the development of e-commerce. Take China as an example, the reasons why the Internet fee is the most expensive in the world lie in two aspects. One is the monopoly in the telecommunications industry and the other is an incomplete infrastructure. As far as India is concerned, its economic infrastructure construction is relatively backward, which has influenced the growth of logistics and ultimately affected the development of e-commerce. It is urgent for India to perfect e-commerce infrastructure construction including the constructions of railways, highways, airports and ports as well as information infrastructure.

(2) Different strategic objectives and strategy positions

The strategic objectives and strategy positions are determined by the economy and technology. The leading country wants to keep its leadership in politics, economics and technology. However, nations with comparative power want to challenge the leading position, or at least to match it. Whereas nations with less power just want to be in a more advantageous position, or be a regional leader. For example, the e-commerce strategy of the United States is to keep its leading position in IT while the e-commerce strategy of Japan is to overtake the United States and be a new master in e-commerce. The aim of Indian and ROK's e-commerce strategy is to be the leader in their region.

(3) Different establishment period of e-commerce strategies

It depends on the different positions of each country in the new economy. India and Ireland were the first two nations which made a long-term development strategy for IT. Consistent with this, India and Ireland have been great powers in the IT field and their status in the new economy has exceeded many developed countries such as Japan, Germany, Great Britain and France. Although the economic growth rate in India was slower than that in China in recent years, its quality of economic growth is better than China's. There are some characters in the economic growth of India. First, the service industry is the dominant industry in India instead of the manufacturing industry. Second, the gap between the wealthy and poor has not been enhanced. Last, its economic growth does not strongly depend on the international market. All of this shows that India has more sustainable development potential than China. In contrast, Japan realized the importance of IT only after its long-term economic recession and its IT development strategy was established during the middle and late 1990s. This is why Japan, as the third great economic power, should learn from India in the IT area. The establishment time of China's e-commerce strategy is generally the same as that of Japan's e-commerce strategy. For China has fell behind India in e-commerce for many years, China should not only pursue developed countries

such as the United States, Japan, France, Germany and Great Britain but also keep up with developing countries such as India and Ireland in IT and e-commerce areas.

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