

# ***ON OBSTACLES TO E-BUSINESS DEVELOPMENT IN MAINLAND CHINA***

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Although Internet-based e-business has been developing very rapidly in Mainland China in the last seven years, ten obstacles have hindered its development. If great importance is not attached to these obstacles and effective measures are not taken to overcome them, the e-business in Mainland China will lag farther behind developed countries and regions and Mainland China will be in a disadvantageous position in the era of information and knowledge-based economy.

This paper at first reviews the e-business development in Mainland China since 1995, then, analyzes the obstacles and the challenges it is confronted with and puts forward some countermeasures to overcome them. The analysis and the data quoted are primarily based on the interviews conducted in April 2002 among my college students and e-business managers in Hangzhou and on the Survey Reports On Internet Development in China released from October 1997 to January 15, 2002 by China Internet Network Information Center (CNNIC), which is operated and managed by Computers Network Information Center of Chinese Academy of Science. CNNIC has conducted nine surveys at regular intervals in collaboration with other four internet institutions and so far has released nine Survey Reports On Internet Development in China in succession since 1997. The paper finally concludes that the e-business future of Mainland China is the most promising undertaking on the Internet if the Chinese government on different levels acts as a strong regulator, an effective coordinator, an aggressive infrastructure builder, and an active e-business initiator and consumer so that the obstacles may be overcome.

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**Keywords: e-Business; Mainland China; Internet; CNNIC; Development; Computer; WWW; Information; Enterprises; Economy**

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## INTRODUCTION

Though the general Chinese public did not hear the words “Internet” and “e-business” until early 1995, the Internet and e-business have experienced dramatic development and growth in the last seven years in Mainland China despite the tough and harsh e-environment in its initial stage. The obstacles to e-business development in Mainland China deserve great attention from Chinese policy makers, officials and administrators, business leaders, and law-making bodies in order to secure sustained and continuous development of its e-business.

### **A REVIEW OF INTERNET-BASED E-BUSINESS DEVELOPMENT IN MAINLAND CHINA**

#### ***Mainland China's Access to the Internet Overseas***

Although as early as September 20, 1987, Professor QIAN Tian-bai, who was in charge of the Chinese Academic Network (CANET), sent the first email message from Mainland China to KARLSRUHE University in Germany, Mainland China did not really enjoy access to the Internet until April 20, 1994, when it was officially recognized as one of the Internet members in the world after China's NCFC Project had become connected with Sprint in the USA Report on China's e-commerce Index, YEAR).

#### ***The Launch of Golden Engineering Project by the State Council of P. R. China***

The word “Internet” was not known to the general public until March 12, 1993, when then Vice Premier of the State Council of P. R. China, ZHU Rong-ji, put forward the plan to undertake the Golden Engineering Project to construct China's national public economic

and information network. The Golden Engineering Project did not really begin, however, until after June 8, 1994, when the State Council issued *Announcement Concerning Golden Engineering Project [(Golden Bridge, Golden Cards and Golden Taxes) Document No. 18, 1994]*. Then, the Golden Engineering Project was in full swing (China Internet Network Information Center, YEAR). Public and business-oriented applications appeared and increased with the development of an information infrastructure. More and more enterprises and individuals became acquainted with the words “Internet” and “e-business” or “e-commerce.”

#### ***Tough e-Business Environment and Rapid Development***

e-Business did not begin to develop until the spring of 1995 when Internet services began to be available to the general public. The Internet and Internet-based e-businesses have been developing very rapidly in Mainland China since January 1995, when a group of young pioneers headed by HE Yi-bing and Jack MA, crashed into this brand-new field with path-breaking courage and the commitment never to give up. As a result, the first commercial website called *chinapages.com* was set up in Mainland China, followed by *infohiway.com* and *chinaonline.com*. The e-business environment for the three pioneers was then characterized by the following aspects:

1. Few people in China knew the Internet. Much educational work had to be done. The staff members in the three e-business enterprises were very often engaged in the patient work of enlightenment. They had to explain what the Internet was and what conveniences, benefits it could bring to man and how it could change the way we live, the way we do business and the way we learn.

2. Chinese enterprises or business leaders were very reluctant to spend money on Internet ventures.
3. There were no laws or rules at all available regarding e-business in China. Therefore, chinapages.com gradually became the target of imitation and copying. Many sites bearing a name similar to chinapages either in pronunciation or in writing appeared one by one all over China. Over 600 brand names of the Chinese enterprises were illegally or inappropriately registered on the Internet by businessmen overseas. The government and the enterprises had to make joint efforts to get back their brand names through diplomatic channels or negotiations, or by legal means (Wang, 1997).
4. The Internet infrastructure was very poor and undeveloped. Therefore, the Internet was very slow and very expensive.

With strong support from the Chinese governments at all levels, the e-environment in Mainland China has greatly improved in the following aspects since 1995:

1. Both the Chinese governments at all levels and the ordinary Chinese people have come to realize the economic potential of the Internet. The recent survey report released by CNNIC on January 15, 2002 indicates that over 55 percent of the Internet users think that the Internet has a great effect or a very great effect on their study, work and daily life. (China Internet Network Information Center, YEAR).
2. More and more Chinese people, especially the younger ones, are becoming English literate and computer literate. English and computer courses are provided to all the students from junior high schools to universities, even to pupils in some of the kindergartens and elementary schools. All the college stu-

dents and the people who want to be professionally promoted must pass a foreign language test, most likely English, and a computer applications exam administered by the Ministry of Education of China. Since English is the tool of communication in international business, the improvement of English literacy and computer literacy has certainly contributed to the development of e-business in Mainland China.

3. The charges for telecommunication and Internet services decreased dramatically in March and October 1999, and in 2001. As a result, the Internet services have been affordable for more people.
4. The infrastructure for e-business has been improving. The capacity of the international outlet line increased from 25.1M in 1997 to 7598M in 2001. China has been connected with major business partners, such as the USA, Canada, Australia, the UK, Germany, France, Japan, and South Korea (China Internet Network Information Center, YEAR).
5. Since 1996, fifteen national and departmental regulations and rules regarding the Internet and e-business have been promulgated, which will certainly contribute to the creation of a fair and orderly e-business environment.

With these improvements, the number of computers with access to the Internet, Internet users, domain names registered under "cn", www websites and the capacity of international outlet lines shot up (See Table 1), while Mainland China's GDP has maintained an increase of 7-8 percent for the last few years.

Despite its increased Internet use, Mainland China still lags far behind on the level of informatization if we take the huge population of nearly 1.3 billion into consideration and compare it with that of some developed countries (See Table 2 and Table 3).

TABLE 1  
The Internet Development in Mainland China

Year	Computers With Access to Internet		Internet Users		Domain Names Under "Cn"		"wwwwebsites"		Capacity Of International Outlet Line	
	No. (mil.)	up (%)	No. (mil.)	up (%)	No. (mil.)	up (%)	No. (mil.)	up (%)	No. (mil.)	up (%)
1997	0.299		0.62		4066		1500		25.1	
1998	0.747	256	2.1	339	18396	452	5300	353	143	570
1999	3.5	469	8.9	424	48965	266	15153	286	351	245
2000	8.92	224	22.5	253	122099	250	265405	1752	2799	797
2001	12.54	141	33.7	150	127319	104	277100	104	7598	271

Source: CNNIC's Survey Reports on Internet Development in China since October 1997 [4].

Note: The data in 1997 cover the date until the end of October 1997 and the other data cover the date until the end of each respective year.

### THE BARRIERS TO E-BUSINESS DEVELOPMENT IN MAINLAND CHINA AND THEIR SOLUTIONS

Generally speaking, China's e-business is still in the initial stage of development. According to the Survey Report on Internet Development in Mainland China released by CNNIC on January 15, 2002, only 0.4 percent of the Internet

users go e-shopping and are engaged in online business activities. Regrettably, the number decreased from 0.86 in the same period of 2000. Both the number of people who have shopped online and the e-business volume are still very small (China Internet Network Information Center, YEAR). The following factors have hindered e-business development in Mainland China:

TABLE 2  
Internet Users Among 100 People

USA	Finland	South Korea	Germany	Japan	China
45	38	21	18	15.5	2.6

Source: 1. Guo-jie Li, The Difficulties Facing China's E-commerce Development and Its Counter-measures, Proceedings of International Symposium on Government in E-commerce Development, Ningbo, China, April 23-24, 2001, ISBN 7-308-02695-7 [6].  
2. Survey Report on Internet Development in China released by CNNIC on January 15, 2002 [4]

TABLE 3  
Computers Owned by Every 10 Thousand People

World	High-income countries	Middle- and low- income countries	Finland	USA	China
63.1	375	2.41	996	976	0.16

Source: Guo-jie Li, The Difficulties Facing China's E-commerce Development and Its Counter-measures, Proceedings of International Symposium on Government in E-commerce Development, Ningbo, China, April 23-24, 2001, ISBN 7-308-02695-7 [6].

**Computer Illiteracy and English Illiteracy among Elderly Business Decision-Makers**

As Table 4 indicates, the Internet users above 40 years of age account for only 11.9 percent of all the Internet users while the remainder account for 88.1 percent. As the decision-making power structure is based on the pyramid of seniority in Mainland China, most of the decision makers in Chinese business management and enterprises are above 40 and most of them learned Russian as a foreign language instead of English or did not learn any foreign language at all during their school days because of the Cultural Revolution (1966-1976), and there were no computer classes for them at school, either. Because Mainland China was closed to the West before the 1980s. Generally speaking, the older the decision makers are, the less literate they are in computers and English. If the decision makers are computer illiterate and English illiterate in an institution or enterprise, it will be difficult for them to understand and adopt e-business practices, since over 70 percent of the information on the Internet is in English and English is the international language for business communication, whether one likes it or not. Therefore, the development of e-business depends

mainly on the younger Chinese generation and the updated knowledge of the English language and computer applications on the part of Chinese people over 40, who are usually well paid.

As Table 4 and Table 5 indicate, most of the well-paid people of 40 years old do not use the Internet. Those with no income at all and with a monthly salary of less than RMB¥1000 account for 61.2 percent of all the Internet users, most of whom are students or young employees just fresh from universities. It is a pity that few of the well-paid people with a monthly salary of over RMB¥3000 use the Internet. Therefore, it is predicted that the e-business enterprises in Mainland China will not been able to make good profits in the near future.

According to Mr. Freeman Gao, General Manager of *Chinapages.com* and Ms. Lucy Peng, *Human Resources and Administration Director of Alibaba.com*, over ninety percent of their employees are under 30 years old. According to the interviewees who are my students, all of their parents were educated during the Cultural Revolution and over 90 percent of their parents are not able to read English or speak English at all. But half of their parents had turned to them for help when they did not know how to use their computers.

TABLE 4  
Internet Users in Different Age Range

Age Range	Under 18	18-24	25-30	31-35	36-40	41-50	51-60	Over 60
%	15.3	36.2	16.3	12.1	8.2	7.6	3.2	1.1

Source: CNNIC's Survey Report on Internet Development in China released on January 15, 2002 [4].

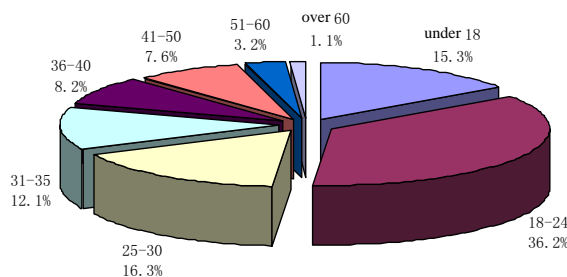


TABLE 5  
Income Differences Among Internet Users of Different ages

RMB¥ 500	RMB¥ 501-1000	RMB¥ 1001-1500	RMB¥ 501-2000	RMB¥ 2001-2500	RMB¥ 2501-3000
23.6%	25.3%	16.5%	8.8%	4.4%	3.4%
RMB¥ 3001-4000	RMB¥ 4001-5000	RMB¥ 5001-6000	RMB¥ 6001-10000	RMB¥ Over 10000	no income
2.3%	1.1%	0.8%	0.7%	0.8%	12.3%

Source: CNNIC's Survey Report on Internet Development in China released on January 15, 2002 [4].

### ***Incomplete Understanding of the Real Sense of e-Business***

Some businessmen and business decision-makers think that e-business means only sending business messages by e-mail or just having a domain name registered on the Internet or creating a website at www. In fact, e-business is far more than that. It refers to a series of business activities in which inquiring, offering, ordering, producing, marketing, advertising, warehousing, buying, selling, insuring, transporting, paying and delivering are handled or arranged through the Internet, Intranet, Extranet, etc. (Wang & Jiang, 2001). "Electronic commerce is a general concept covering any form of business transactions or information exchange executed using information and communication technology, between companies, between companies and their customers, or between companies and public administrations. Electronic commerce includes electronic trading of goods, services and electronic materials." (Esprit, 1997; Whiteley, YEAR). With the help of modern electronic technology and telecommunication technology, no paper is used, the costs are reduced, the processes speeded up, efficiency greatly improved and profits increased. It involves the flow of information, data, cash, and commodities online. It is a radical revolution and represents the advanced productivity that is replacing our traditional storefront businesses. It is radically changing and will radically change the way business is conducted, the way we work, and the way we live and learn.

An e-business is an enterprise designed for success in the knowledge-based economy. It brings into full play the resources of organizations and businesses and their partners in new and innovative ways to create clear strategic advantages. The potential of e-business goes far beyond new technologies to impact and engage all aspects of business strategies, processes, organizations, and systems to extend the business beyond its own boundaries where there are, in fact, no boundaries.

### ***Insufficient Technical and Legal Protection***

At present there are security problems and crimes on the Internet, such as using passwords illegally and making use of the resources in other people's computers, spreading computer viruses, stealing or deleting or revising confidential information of the government or enterprises, spying on business activities of enterprises or public institutions and stealing their business secrets, or illegally moving capital or stealing deposits of others from their banks (Shen, Yang, & Shen, YEAR). Of the computers with access to the Internet in Mainland China, the computers of 63. percent of the Internet users have been infected with viruses and/or attacked by hackers, which has resulted in huge losses. Though fifteen national and departmental regulations and rules have been promulgated regarding the Internet and e-business, no national or local e-business laws have been developed (China Internet Network Information Center, YEAR;

Mei, YEAR). So far Chinese business laws and rules have not yet confirmed the legal efficacy of electronic signatures and authentication in e-business. No legal platform has been set up to secure the legitimate and successful execution of e-business transactions. Since e-business is trans-national and thus extends beyond its own national borders, Chinese e-business laws must be in strict conformity with international e-business laws and practices. They should cover not only e-business transactions, but also high technologies like electronic encrypting and automatic authentication. It is very essential to annul the outdated laws and regulations which hinder e-business development and to enact laws regarding computer viruses and hackers. Priority should also be given to the laws regarding information security, business secrecy, legal efficacy of e-business transmission dates and e-signatures, the protection of personal privacy and of intellectual property rights on the Internet, and the protection of children from violence and pornography online. Laws regarding import and export duties and tariffs on e-business must follow, or else the government will sustain huge losses with the increase of the e-business volume (Wang & Jiang, 2001). As we can see, technical and legal protection means far more than just a virus killer and a firewall installed in the computer.

### ***Little Privacy, No Sense of Security and No Trust in e-Business***

Because the Internet is global and a lot of information can be collected online, peoples or consumers all over the world are concerned over their privacy. They are very concerned about

1. if their data are safe when they are transmitted,
2. if their information or data may be read by others without their authorization or permission,

3. if their personal electronic data stored by their enterprises may be disclosed to unrelated people (Greenstein & Feinman, YEAR).

Traditionally and culturally, the Chinese people enjoy less privacy than the people in the West. Among Chinese Internet users, 39.2 percent of them have doubt about the reliability of the advertisements online, 31. percent of them are worried about their information security, 30.2 percent of them are concerned about the quality of products, the enterprises' credit, and prompt after-sales services, 37.4 percent of them are unwilling to buy or choose the services or the products only from the information available online (China Internet Network Information Center, YEAR). They do not trust e-business because of insufficient legal and technical protection. Traditionally Chinese consumers have been weak and vulnerable to fraud through deceptive practices such as fake, shoddy products and false advertisements. For example, in addition to a large number of trading disputes concerning shoddy and fake products, there were 13,565 lawsuits in courts in Mainland China initiated by consumers who bought fake and shoddy products even in physical storefront businesses in 2000 (*Law Today Program by CCTV Channel 1, July 28, 2001*). The Chinese consumers do not have enough effective legal protection from law-enforcement departments concerned. In e-business there is no face-to-face contact and the consumers cannot examine their purchased products with their eyes and hands. The after-sale services still have much room for improvement. So they feel that they are more vulnerable to cheating through fraud and false information online than in the physical storefront businesses. They are generally reluctant to disclose personal or corporate information on the Internet. Though there is a Chinese law regarding the protection of consumers' rights and interests, it is yet to be strictly enforced.

### ***Insufficient Human Resources in Information Technology (IT)***

The demand for engineers and technicians in information technology (IT) greatly exceeds the supply in the human resources market. At the Employment Exchange in 2000, the number of IT positions in demand was twenty times as big as that of IT job seekers. Moreover, every year a large number of IT engineers from Mainland China have left for developed countries or regions for employment because of the higher salary there. Consequently, it is difficult for small and medium-sized enterprises in Mainland China to employ IT engineers. Among the 10 million small and medium-sized enterprises registered with State Administration for Industry and Commerce of P. R. China, the business information of less than 10 percent of them is electronically processed. Among the approximate 15,000 state-owned large and medium-sized enterprises, the business information of only 10 percent of them is basically computerized and one-fifth of them have only a few computers used merely as typewriters or employed in their financial departments (Yang, YEAR).

### ***Underdeveloped Infrastructure and Financial Unavailability***

The Internet infrastructure is still underdeveloped on the whole. High-speed information transmission main network and high-speed broad bandwidth Internet services are available only to the residents in a few big cities. Most of the Internet users have access to the Internet via the telephone line. The government's monopoly of the Chinese telecommunication and information industry has yet to be completely done away with. As a result, the Internet services are characterized by low speed and high cost. Among the Internet users, 38.4 percent of them are dissatisfied with the slow speed, 40 percent of them are dissatisfied with the high charges. The system of fair competition must be introduced into the information and telecommunication industry before

the charges for the Internet services can further decrease dramatically. Since most of the Internet users are under 30 and the average monthly salary for an Internet user is less than 1500 RMB yuan (less than 200 US dollars), the high cost (5 RMB yuan per hour on line with all the costs added up ) makes Internet services not affordable to many people, especially to young students with no income at all, but who account for 23 percent of all the Internet users in Mainland China (China Internet Network Information Center, YEAR). When I asked my students to do assignments on the Internet and then send them back to me my e-mail, over eighty percent of them protested against it by saying that it was very inconvenient for them to do it on the Internet and send them back to me by e-mail because the speed was too slow and it was too expensive to use the computers in the Internet bars. As a result, only 20 percent of them did my assignments electronically. Only after China has deepened its economic reform and fulfilled its commitments with other WTO members can the monopoly of the Chinese telecommunication and information industry be completely done away with and can the general public enjoy easier access to the Internet and afford the lower prices for the Internet services and e-business.

### ***Lack of a System of Certificate Authority, a National Payment System, and National Credit System.***

There is no system of Certificate Authority or identity authentication to identify the parties involved in the e-business transactions. We must guarantee data security by preventing unauthorized parties from acquiring the data online. The security can be accomplished through certificate authority or identity authentication or by allowing users to acquire authorized information through the right setting and data hiding technology. It is more complex than a password or a firewall and involves a set of systematic technologies of hardware and software. Online there is no national payment system or national credit system yet. Though



30 percent of the Chinese Internet users have credit cards, 42.8 percent of them choose the method of cash upon delivery for online purchases (China Internet Network Information Center, YEAR). Though *Alibaba.com* had had more than 1,400,000 registered members by April 2002, yet most of them conclude transactions offline after they have found their business partners online because most of them do not trust each other online. Although the differences between domestic trade and international trade are greatly diminished online, the incomplete free convertibility of the Chinese currency RMB yuan in the international financial market stands in the way of international payment in e-business transactions.

### ***Lack of a Reliable and Efficient Logistic System***

“Despite the cliché that ‘the Internet is the death of geography’, place and physical displacement still matters. These elements matter less today than a decade ago, however. This is particularly true for the growing number of enterprises in which the strategic utilization of information plays a key role in bringing products to market” (Camarinha-Matos, Afsarmanesh, & Rabelo, YEAR). Since the B2C e-commerce has close relationships with the retail industry, the smooth flow of commodities is a very important process in the chain of an e-business transaction. A reliable and efficient logistic system is the cornerstone of e-business. The present goods delivery system in Mainland China is far from reliable, efficient, and punctual. Among the internet users, 13.9 percent them think the delivery system is time-consuming and inefficient (China Internet Network Information Center, YEAR). Because most of the population of 1.3 billion is concentrated in the east and the southeast regions in China, traffic jams are a headache, especially in big cities. The improvement of the infrastructure for transportation by sea, by air, and by land and the establishment of a modern and comprehensive system of warehousing, transporting and delivering is of vital

importance not only to the development of e-business, but also to the sustained and continuous economic development of Mainland China.

### ***Lack of a Unified National Technology Standard to Guarantee Interoperability***

There are now several platforms for e-business, such as XML, Open Buying, Java, and Electronic Data Interchange (EDI) in Mainland China. e-Business providers must collaborate to work out a unified standard for the sake of interoperability for all products in Mainland China.

### ***Uneven Interregional Internet and e-Business Development***

As Table 6 shows, though the differences between the number of Internet users, www websites, and domain names registered in the five provinces and cities in the east and the southeast, and those registered in the 12 provinces, cities & regions in the west and the southwest narrowed in 2001, the contrast is so sharp that it deserves our attention and concern. It is well-known that the east and the southeast are economically better developed than the west and the northwest. Their favorable economic situation in the east and the southeast is beneficial to the rapid development of their e-business, which will contribute to the rapid growth of their economy. For example, Mr. Zhang from Hangzhou, a developed area in China was able to use the computer well before he was admitted to a college in Hunan, a less developed area. He was surprised to find that eighty percent of his classmates in the college had not seen a computer before they were admitted to the college.

It is of great concern that the disparity of the e-business development between developed regions in the east and the southeast, and less developed regions in the west and the northwest will contribute to a sharper contrast

TABLE 6  
The Sharp Contrast in the Internet and E-Business Development Between the East and the West

	Year	12 Provinces, Cities & 5 Provinces & Cities in the East and Southeast	
		Regions in the West and Northwest	
No. of domain names under "cn"	Jan. 2002	68.1%	8.8%
	Jan. 2001	68.7%	8.5%
No. of www websites	Jan. 2002	62.7%	8.9%
	Jan. 2001	64.6%	8.1%
No. of Internet users	Jan. 2002	44.0%	17.4%
	Jan. 2001	43.1%	17.5%

Source: CNNIC's Survey Reports on Internet Development in China [4]

Note: The five provinces and cities in the east and southeast refer to Beijing, Shanghai, Guangdong, Jiangsu and Zhejiang while the twelve provinces, cities & regions in the west and northwest refer to Shanxi, Gansu, Qinghai, Ningxia, Xinjiang, Sichuan, Zhongqing, Yunnan, Guizhou, Tibet, Guangxi, and Inner Mongolia.

between wealth and poverty, which will contribute to the social instability in Mainland China. Although e-business and the Internet itself are driven primarily by the market forces and the private sector, the governments on different levels still have important roles to play in narrowing the differences not only in their economic development, but also in their e-business development.

The interviews I conducted were limited to my students and e-business acquaintances or managers, and the surveys conducted by CNNIC have not covered all the parts of Mainland China. As the surveys by CNNIC and my research in e-business go on, the related data and information will be more objective and my research will go deep in the future.

## CONCLUSION

Rome was not built in a day. Some of the aforementioned obstacles cannot be overcome overnight. Yet, if great importance is attached to them and effective measures are taken to overcome them, e-business in Mainland China will develop more rapidly. Otherwise, it will lag farther behind the developed countries and China will be in a disadvantageous position in the era of information and knowledge-based economies. "We were not in time for the

Renaissance. And we missed the Industrial Revolution. Today, we shall not let slip the wave of the Information Age" (*Chinapages.com Bulletin*).

According to CNNIC's Survey Report on Internet Development in China released on January 15, 2002, the Internet users in Mainland China have confidence in the future of e-business. Among them, 54.5 percent of them believe that e-shopping, which ranks first among all the Internet services, will be the most promising undertaking on the Internet. After Mainland China's accession to the WTO, its e-business will meet with more opportunities than challenges. The rapid growth of e-business in Mainland China will contribute substantially to its sustained and continued economic growth if the Chinese government at all levels becomes a strong regulator in mapping out national and local policies and strategies, and, building a legal platform for e-business, acts as an effective coordinator in creating a fair and orderly e-environment for all domestic and overseas parties concerned in collaboration with international institutions and bodies, serves as an aggressive e-business infrastructure builder to pave the material way to its success, and plays an active role as an e-business initiator and consumer in e-business modes, such as B2B, B2G and B2C.

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