Analysis of Regional Imbalance of E-commerce in China

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ABSTRACT

With the rapid development of knowledge economy in the 21st century, e-commerce is undoubtedly a more popular topic, with high efficiency and low cost in all areas. However, regional imbalance of e-commerce is a new problem in China. In this paper, we present an explanation from eight perspectives to analyze the causes of this phenomenon: economic level, Internet penetration, government policy, credit system, logistics, enterprise participation, talent, and customers' attitude. Based on analysis of the reasons for the regional imbalance of e-commerce, this paper puts forth suggestions for future developing e-commerce in the three different areas.

Key words: e-commerce, regional imbalance, China

1 Introduction

As communication technology and computer network technology have been widely applied to the field of social-economics, the ubiquity of the Internet is becoming a powerful force to promote the survival and evolution of enterprises, regional economic growth and even development of national economies. Recognized as an essential branch of Internet-based business, electronic commerce, commonly known as e-commerce or EC, primarily refers to the buying and selling activities, maintaining business relationships, and conducting business transactions over the Internet (Chen H. Z. & Zhang C, 2009). E-commerce that focuses on a firm's customer can be defined as the interchange of goods, services, property, ideas, or communications through an electronic medium for the purposes of facilitating or conducting business (Coppel J., 2000) and, therefore, provides organizations the opportunity to deliver products and services "virtually" to customers. E-commerce is rapidly

reshaping the marketing domain and many of its traditional practices.

E-commerce is generally classified into four types: Business to Business (B2B), Business to Customer (B2C), Customer to Business (C2B), and Customer to Customer (C2C) (Costello G. I.&Tuchen J. H., 1988). B2B refers to online transactions between business organizations as well as governments and nonprofit institutions. B2B reflects the notion that both sellers and buyers in the market are companies or organizations, and covers a broad range of applications allowing companies to form electronic relationships with their distributors, resellers, suppliers, and partners. C2B includes individuals who sell products or services to organizations, as well as individuals who seek sellers, interact with them, and then conduct a transaction. B2C refers to electronic business transactions between business and individual consumers who are buyers. C2C involves individuals selling their product or services online to business.

E-commerce, which promises to revolutionize the shopping and information-gathering choices available to customers, has affected, changed and even replaced the traditional commerce approaches, and gained a great amount of success recently in China. The remarkable achievements made during the last several years have witnessed the rapid growth of e-business in many aspects, such as the scale of users of e-commerce applications, the number of third-party service companies, e-commerce transaction volume, and so on. By the end of December 2011, Chinese netizens reached 532 million, more than the sum of those in the USA, Japan, Britain, France, Germany and other countries. In 2011, the e-commerce market in China created outstanding prosperity. Statistics show that domestic electricity supplier sites have reached 23,200; electronic business transactions saw rapid growth in size, from 498 billion in 2010 to nearly 750 billion yuan with an increase of over 50%; Chinese online shopping surged from 130 million in 2009 to 200 million in 2011; the size of overall dealings in Chinese e-commerce was nearly 7 trillion, compared to 4.5 trillion in 2010.

2 Literature Review

Most previous studies have primarily discussed the development of e-commerce from the perspectives of several different types of e-commerce (e.g., B2C, B2B, and C2C), the various industries (e.g., Retail, textile, and tobacco) or some certain aspects of this industry (e.g., Customers' behavior, trust system). Chen and Chen expounded the significance of sports industry informatization and the important role of e-commerce (Devaraj S. & Fan M., 2002). Benjamin et al. Used the associative network model of memory to explain brand knowledge and to show how the mere exposure effect can be leveraged to improve a Web site's brand image and extended information integration theory to explain how branding alliances are able to increase initial trust and transfer positive effects to Web sites (Gibbs J., Kraemer K. L. & Dedrick J, 2006). Meng used a dynamic pricing model for e-commerce based on data mining in the pricing mechanisms, and discussed the application of the model in C2C and B2C modes (Guo ZG, Zhang N, 2010).

As regional information (including the continuous development of city information technology) and the role of information technology in the process of regional development are gradually emerging, regional e-commerce increasingly becomes a hot topic. Thought e-commerce contributes greatly to the overall national economic sphere; from A Research Report on Chinese Netizens' Behavior in E-commerce released by China Internet Network Information Center (CNNIC) in 2011, the gap of e-commerce development between regions is larger in China: the eastern region developing at a fast pace, whereas the central region and western region's development is relatively slow. This regional imbalance directly engenders a serious worry that the speed of overall economic growth will be decreased, thereby negatively influencing the process of Chinese information industrialization.

As shown in Table I, the eastern area is constituted by 11 provinces, including 8 coastal provinces (e.g., Shandong, Jiangsu, Zhejiang, Guangdong, etc.) and the 3 municipalities of Beijing, Tianjin and Shanghai. The central area consists of 10 provinces, which are all inland provinces, e.g. Heilongjiang, Jilin, and Inner Mongolia. The west area covers more than half of the territory in China, which includes one municipality of Chongqing and 9 provinces, including Gansu, Qinghai, Tibet, and Sichuan.

Table 1. Areas in China

Regions	Provinces
East Area	Beijing, Tianjin, Shanghai, Liaoning, Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong and Hainan
Central Area	Heilongjiang, Jilin, Inner Mongolia, Henan, Shanxi, Anhui, Hubei, Hunan, Jiangxi and Guangxi
West Area	Gansu, Guizhou, Ningxia, Qinghai, Shaanxi, Tibet, Yunnan, Xinjiang, Sichuan and Chongqing

Many scholars assess the economic impacts of e-commerce in the B2B and B2C spheres, showing that economic level is an important indicator that reflects the e-commerce level to some extent and high level of economy will promote the development of e-commerce in turn, which is a benign cycle. As the basic condition of e-commerce, Internet liberalizes telecommunication markets earlier (United States, United Kingdom, Japan, Sweden, etc.) (Lowry P. B., Vance A., 2008, Madu C. N., Madu A. A., 2002, Teece D. J., 2000), and gives users much faster access to e-commerce. The United States, for example, is the clear leader with close to 60% Internet penetration. When we discuss in the view of areas, governments play a significant role (Meng Q Q, Han X, Yu D M, 2010.). Besides, building trust via setting up the credit system affects buyers' intention (Oxley J E, Yeung B, 2001). A perfect credit system not only regulates behaviors of businessman online but also attracts more and more customers. As the main part of e-commerce, moreover, the more the companies join in the trend of e-commerce, the better and faster this industry will develop. Therefore, enterprise participation is a prime factor influencing e-commerce (Oxley J E, Yeung B, 2001).

However, delivering goods to customers is a critical step during the network transaction and it is necessary to take logistics into consideration when we evaluate the level of e-commerce. In the stage of starting an e - commerce in China, lack of talents will inhibit its long-term development, the reason for which talent is also a part of e-commerce development. From relative reports of e-commerce in China, most common buyers are unwilling to go shopping online on the base of their attitudes, such as less information and distrust. Unfortunately, there is little literature contain those reasons above to analyze e-commerce comprehensively.

Considering the weightiness of e-commerce development in promoting the national economy and the severe phenomenon of regional imbalance in e-commerce, this paper discusses reasons among which several are new perspectives from literature before, for the imbalance from eight aspects, i.e. economic level, Internet penetration, government policy, credit system, logistics, enterprise participation, talent, and customers' attitude, shown in Fig. 1. It then offers some suggestions to make e-commerce more attractive and popular in China in the promising future.

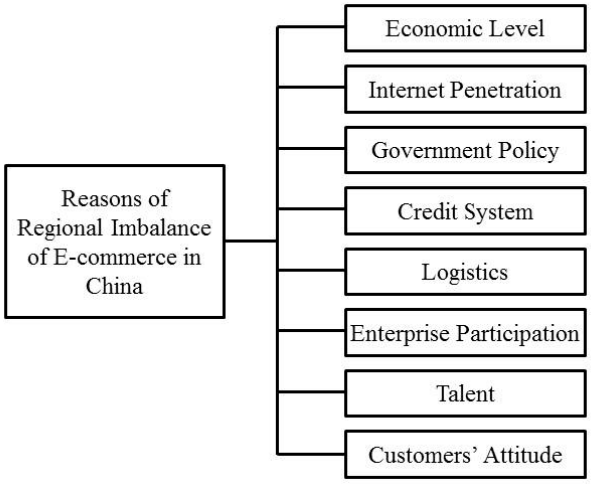

Fig. 1. Reasons for Regional Imbalance of E-commerce in China.

3 Analysis of Regional Imbalance of E-commerce in China

3.1 Economic Level

GDP is an effective index to measure the economic level of certain areas. Generally, there is a strong correlation between GDP per capita and our measures of e-commerce and it is reasonable to use GDP in measuring economic level (Lowry P B, Vance A, Moody G, Bryan B, Aaron R, 2008). The latter can, accordingly, reflect and evaluate the development status of e-commerce.

The eastern area has made great progress in the economic devolvement in the past 30 years, and its GDP output is approximately half of the Chinese total GDP output. Most of the light or heavy industries, foreign trades and service industries in China are located in this area, and most high

technologies are also attracted by this area. The economic growth of the central area is less than that of the eastern area. Compared to the other two areas, this region has a low population density, and is also the least developed area in China. The GDP of provinces in China, released by the National Bureau of Statistics of China, is shown in Table 2 and the disparity of different regions is clear. The GDP of provinces in the eastern area (28.25 trillion yuan) accounts for most of the national GDP, and the GDP per capita is also the highest. The GDP of the central area (14.97 trillion yuan) is relatively lower than the eastern area but higher than the western area (6.86 trillion yuan), which is the poorest. Though some provinces in the central area and west area have high GDP for the larger population, GDP per capita would mirror the real economic level.

Table 2. GDP of Provinces in China

Province	GDP (trillion yuan)	Growth Rate	GDP Per Capita (yuan)
Guangdong	5.3	12.8%	50500
Jiangsu	4.8	10.4%	61022
Shandong	3.8	10.9%	46976
Zhejiang	3.18	8.9%	58791
Henan	2.7	11.5%	28716
Hebei	2.4	12.6%	33719
Liaoning	2.2	11.6%	50394
Sichuan	2.0	10.1%	26147
Hunan	1.96	12.6%	29893
Shanghai	1.92	11.2%	82560
Hubei	1.8	14.2%	34233
Fujian	1.75	12.3%	47433
Beijing	1.6	10.6%	80394
Anhui	1.5	10.9%	25395
Inner Mongolia	1.4	13.7%	56666
Shaanxi	1.2	12.6%	33197
Jiangxi	1.2	11.8%	25988
Guangxi	1.2	12.4%	25449
Tianjin	1.1	17.5%	86496
Heilongjiang	1.1	12.2%	32637
Shanxi	1.1	10.6%	30802
Jilin	1.01	12.0%	3870
Chongqing	1.0	10.9%	34705
Yunnan	0.7	12.2%	19038
Xinjiang	0.66	11.8%	30257
Gansu	0.52	10.6%	19628
Guizhou	0.4	11.0%	16117
Hainan	0.2	15.5%	29712
Ningxia	0.16	13.0%	32692
Qinghai	0.16	14.5%	28827
Tibet	0.06	12.1%	20152

3.2 Internet Penetration

The content usability of e-commerce websites is central to the success of e-commerce, and related to the growth of the Internet population. E-commerce is based on computer network experiences evolution, along with the development of network technology. Although the size of China's online population continues to grow, it is apparent that the Internet penetration rate in different regions is

quite different. In eastern areas, network infrastructure has been well established, which provides great convenience for netizens to access the Internet broadly. Consider, for example, Beijing: By the end of 2011, the Internet penetration rate in Beijing was 70.3%, while some provinces in the western region, such as Yunnan and Guizhou, had less than 25% Internet penetration rate, seen in Table 3. It is clear that all the eastern provinces topped the list of Internet penetration rate, and of them the average rate is the highest (52.1%). The average Internet penetration rate in the central area and western area are 31.52% and 31.94% respectively.

Table 3. Internet Penetration Rate in China

Province	Internet Penetration Rate	Growth Rate
Beijing	70.3%	13.2%
Shanghai	66.2%	23.1%
Guangdong	60.4%	18.3%
Fujian	57.0%	13.7%
Zhejiang	56.1%	9.5%
Tianjin	55.6%	10.9%
Liaoning	47.8%	9.2%
Jiangsu	46.8%	11.5%
Xinjiang	40.4%	7.7%
Shanxi	39.3%	12.4%
Hainan	38.9%	11.4%
Shaanxi	38.3%	10.3%
Shandong	37.8%	8.8%
Hubei	37.2%	11.9%
Chongqing	37.0%	7.9%
Qinghai	36.9%	10.4%
Hebei	36.1%	18.2%
Jilin	35.2%	9.5%
Inner Mongolia	34.6%	14.4%
Ningxia	32.8%	18.2%
Heilongjiang	31.5%	7.0%
Tibet	29.9%	10.8%
Hunan	29.5%	10.8%
Guangxi	29.4%	10.4%
Sichuan	27.7%	11.6%
Henan	27.5%	6.8%
Gansu	27.4%	6.9%
Anhui	26.6%	13.9%
Yunnan	24.8%	11.7%

Jiangxi	24.4%	14.5%
Guizhou	24.2%	11.9%

3.3 Government Policy

Under the background of network technology, policy acts as a determinant of e-commerce diffusion. Positive policy recognized as vigorous support from the local governments will stimulate the growth of e-commerce.

Governments of most provinces in the eastern area have had the foresight to plan conduct e-commerce development strategies, according to local conditions, to impel this emerging and promising industry. For example, in Jiangsu, the construction of “Wireless Jiangsu” was launched in November, 2011 to create a smooth and convenient Jiangsu information highway. In addition, Dongwan, a city in Fujian Province, plans to allocate budgets for the establishment of special funds, a total of 15 million, to build a platform and encourage local enterprises to participate in e-commerce activities. Similar policies in other provinces and cities in eastern area are not uncommon. The specific measures in different provinces hold the same core, that is, to build a good network of e-commerce facilities with the strong support of e-commerce infrastructure and human resources, in order to support the e-commerce industry to expand the development path.

In contrast, governments in the central area place less emphasis upon making relevant policies regarding e-commerce. From the Bureau of Commerce of any province in the central area, the related public regulations not only are less, but also focus on popularizing electronic business knowledge without substantial incentives to promote the development of e-commerce. The western provinces, despite having taken an optimistic approach to e-commerce, face geographical restrictions and financial pressure to enact regulations and further develop this promising industry.

3.4 Credit System

With the rapid development of e-commerce, the defects of credit mechanisms restrict the continued and healthy development of e-commerce. At present, security problems constitute a main resistance for online transactions. Because E-commerce is a virtual platform for transaction, it is more prone to create issues of integrity. A variety of illegal activities, such as false trading, counterfeiting, contract fraud, the violation of consumers' legitimate rights and interests, happen frequently. These phenomena, to a large extent, restrict the rapid and healthy development of China's e-commerce.

In China, there are mainly four typical credit models of e-commerce, i.e., Network ID card, credit rating, network credit guarantee and third-party guarantee, among which third-party guarantee is the most important. Some famous e-commerce sites have established a third-party guarantee system, such as Paypal (eBay) and Alipay (Taobao), as shown in Table 4. Most constituents of third-party systems are banks that originate from and are located in the eastern and central regions. For

example,
there is no Guangfa Bank in the western provinces. This phenomenon restricts the advancement of e-commerce in the western area.

Table 4. Third-party Guarantee

Payment Tool	Paypal	Alipay
Site	www.eachnet.com	www.taobao.com
Constituents of Third Party	EBay, Industrial and Commercial Bank of China, China Construction Bank, China Merchants Bank, ChinaPay	Alibaba, Industrial and Commercial Bank of China, China Construction Bank, China Merchants Bank, Agricultural Bank of China, China Guangfa Bank, Industrial Bank
Site	www.eachnet.com	www.taobao.com

3.5 Logistics

With the development of e-commerce, it has been realized that the consideration of logistics is an indispensable an important basis for an e-commerce environment. The logistics quantity of an area can be described by the index of freight volume. Table 5 reviews the basic situation of freight volume in China in 2010, released by the National Bureau of Statistics of China. The eastern area (13,963.57 million tons) and central area (12,517.8 million tons) account for more than 85% of the national freight volume, whereas western region only has 4,829.24 million tons.

The eastern area developed well historically and opened up earlier, accumulating the perfect logistical infrastructure. Good economic development stimulates logistical demand, and offers abundant opportunities for the logistics enterprise. The central area, relying on rivers, lakes and railways, does not have many advantages for export-oriented economic conditions, and has a low level of technology, equipment and logistics standardization, affecting the logistics efficiency. In terms of west area, the geographical environment is quite bad, which constrains the future growth of logistics. Worse yet, western businesses in China have a weak connection and concentration, and enterprise cluster development is not obvious, obstructing the development of logistics in the western area.

Table 5. Freight Volume in China in 2010 (Unit = 10,000 tons)

Province	Railway Transport	Road transport	Water Transport	Total
Shandong	21314	264366	15633	301313
Anhui	12091	183658	32355	228104
Henan	14721	183291	4950	202962
Guangdong	8562	140689	43092	192343
Jiangsu	6812	123500	48702	179014
Zhejiang	4386	103394	63258	171038
Liaoning	20689	127361	10434	158484
Hebei	18508	135938	2150	156596
Hunan	14721	183291	4950	149540
Inner Mongolia	52069	85162	0	137231
Sichuan	8051	121017	5237	134305
Shanxi	63530	60819	18	124367
Guangxi	9092	93552	12832	115476
Shaanxi	27121	77123	170	104414
Jiangxi	5677	88445	6513	100635
Hubei	6249	71020	16153	93422
Shanghai	959	40890	45407	87256
Chongqing	2279	69438	9660	81377
Fujian	3705	45575	16803	66083
Heilongjiang	17717	40582	1015	59314
Yunnan	5497	45665	402	51564
Xinjiang	6777	41682	0	48459
Jilin	7490	33013	226	40729
Tianjin	7242	20855	11916	40013
Guizhou	7991	30834	910	39735
Ningxia	6872	25453	0	32325
Gansu	6188	24050	32	30270
Hainan	542	13947	7966	22455
Beijing	1578	20184	0	21762
Qinghai	3095	7962	0	11057
Tibet	30	952	0	982

3.6 Enterprise Participation

Enterprise is the main driver and beneficiary of e-commerce. Participating actively in e-commerce will help enterprises increase business revenue, enhance operational efficiency and promote industrial upgrading. The number of companies participating in the process of e-commerce reflects the status of

the e-commerce market. From China B2B E-commerce Report (2009- 2010), released at EBRUN (http://www.ebrun.com/), we take B2B as an example to depict the diverse situations of different areas, which may be reviewed in Figure 2. The vast majority of B2B sites are located in the eastern area. Henan Province, which owns 5.37% of the B2B sites, is ranked the highest among other central provinces. Nevertheless, the sum of the number of B2B sites in the western region is less than 8.72%.

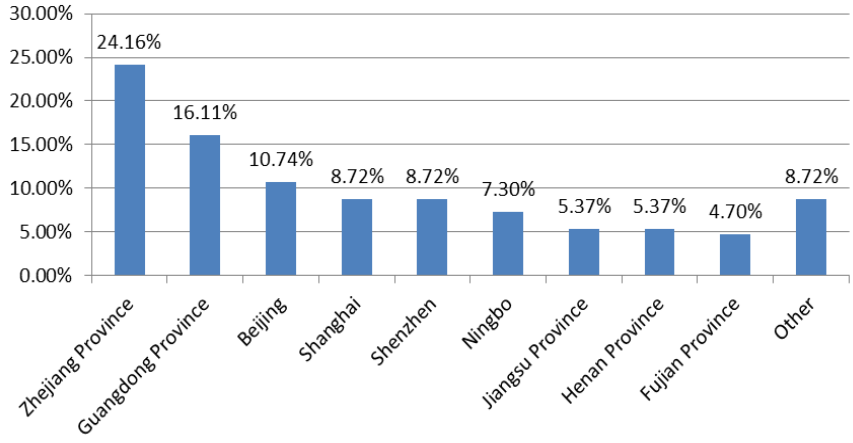

Fig. 2. B2B Website Distribution.

The Ministry of Commerce of People's Republic of China Department of Circulation Industry Development published 87 companies as the Model Enterprises of E-commerce in January 2011, shown in Table 6. All the eastern provinces have in total 60 Model Enterprises, which accounts for 69.0%, while there are 16 Model Enterprises in the central area (18.39%) and 6 in the western area (12.6%).

Table 6. 87 Model Enterprises of E-commerce

Province	Number of Model Enterprises	Percentage	Ranking
Beijing	14	16.09%	1
Shanghai	10	11.49%	2
Zhejiang	9	10.34%	3
Guangdong	6	6.90%	4
Jiangsu	6	6.90%	5
Shandong	5	5.75%	6
Fujian	4	4.60%	7
Heilongjiang	4	4.60%	8
Hunan	4	4.60%	9
Inner Mongolia	3	3.45%	10
Chongqing	3	3.45%	11
Shaanxi	2	2.30%	12
Hubei	2	2.30%	13
Liaoning	2	2.30%	14
Hebei	2	2.30%	15
Anhui	2	2.30%	16
Guizhou	2	2.30%	17
Sichuan	2	2.30%	18
Tianjin	1	1.15%	19
Gansu	1	1.15%	20
Yunnan	1	1.15%	21
Hainan	1	1.15%	22
Jilin	1	1.15%	23
Xinjiang	0	--	24
Shanxi	0	--	25
Henan	0	--	26
Jiangxi	0	--	27
Qinghai	0	--	28
Ningxia	0	--	29
Tibet	0	--	30
Guangxi	0	--	31

Since China adopted policies of economic reform and opened to the global market in 1978, it has made great achievements in economic construction and social development in the eastern area. Most companies have access to the latest knowledge of sales, and make appropriate changes to gain more profits. E-commerce started earlier in foreign countries and gradually spread to China. As the first receivers by virtue of geographical location advantages, the eastern coastal provinces carried out new

modes of e-commerce in the late 20th century and led companies of surrounding provinces to participate in e-commerce. This kind of diffusion effect directly accelerates the development of e-commerce in the eastern area. However, an e-commerce application in the central area are gradually increasing with the development of e-commerce, and as network business sense in enterprises becomes more mature, though there are still large gaps compared to developed eastern enterprises. Most of the western companies are engaged in basic problems (e.g., Production, supply, sales, human resources, financial and material resources management); therefore, they make no effort to engage with electronic problems. Information processing and handling methods are backward, and still provide a simple technical product without the timely tracking of dynamic information. Holing very weak demand for e-commerce, presently e-commerce companies have not yet appeared in large numbers.

3.7 Talent

A large pool of talent performs a key role in e-commerce activities. Invention, construction, application, promotion and the realization of e-commerce system and tools rely on Professional talents' effects. E-commerce talent is neither only information-technology oriented nor only economics-management oriented, but depends upon management talent with both modern business knowledge and information technology facilities. Whether a region can train a large pool of such complex talent is one of the essential factors in the development of e-commerce.

A large number of talents, proficient in e-commerce, who are attracted by the high salary and fine prospects for development in the future, contribute to the development of e-commerce in the eastern area. The tertiary industry in the central region is relatively low, and poor information quality restricts their development to some extent. Less attention on the part of governments and low levels of economic development preclude the maintenance of excellent workers, preventing them from plunging themselves into the construction of e-commerce. A shortage of talent is particularly serious in the western area due to natural conditions, which is becoming the bottleneck in the development of e-commerce.

3.8 Customers' Attitude

Questions about consumer attitudes toward e-commerce vis-à-vis the conventional shopping channels continue to persist, although e-commerce benefits businesses as well as consumers.

Internet users with generally high levels of education in the eastern region obtain the ability to accept new things, and show great eagerness to participate in the e-commerce process. In addition, e-commerce meets their demand for particular goods. Yet in the central area, netizens face the problem of trust and fear of being cheated, because the construction of the credit system there is poorly done, as mentioned before. Western provinces are less developed, for the reason of poverty, with a large number of villages and counties. Residents are therefore relatively conservative. It is

difficult in the western region for e-commerce to gain a high penetration rate, and the level of consumption is far lower than in the eastern and central provinces. Moreover, the foundation of logistics and distribution is weak. All these lead to a situation in which consumers have little knowledge about e-commerce and, thus, less enthusiasm to become involved in e-commerce.

4 Conclusion and Suggestions

The development of e-commerce involves engineering of the whole social system, regional economic growth, consumers, government policy and other various aspects. This paper analyzes the regional imbalance of e-commerce in three areas of China from eight perspectives, namely economic level, Internet penetration, government policy, credit system, logistics, enterprise participation, talent, and customers' attitude. This kind of exploratory research is a challenge to conduct for several reasons. Based on the discussion above, there is a list of suggestions for future development of e-commerce in east, central and west areas.

With the foundation of its sound economy, the eastern area should follow the Internationalization trend of e-commerce, expand overseas markets, and enhance international competitiveness. Additionally, for the reason that e-commerce has widely penetrated into production, circulation, consumption and other fields, and has changed the traditional management mode and production organization form, the integration of e-commerce and industrial development should become deeper increasingly. Given the advanced development of e-commerce, the eastern region should play the leading role in guiding the development of e-commerce in the Midwest areas actively.

With the implementation of the Central Development Project, the economic construction of central area rapidly enhances the ability for industry transfer nationally and internationally. Central provinces should take full advantage of location and transportation to change the pattern of e-commerce economy and conduct attractive policies to draw more talent to make contribution. Despite the fact that the development of e-commerce in the western region is lagging behind, active measures can accelerate economic development and eliminate backwardness. Positive traffic and computer network construction is a first step to progress e-commerce, and creating governmental legislation, initiatives and funding to support the use of e-commerce and information technology will strongly appeal to companies and talent and solve the bottleneck of e-commerce development.

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