

Successful Operation Model Design of Electronic Commerce in China based on Big Data

Jangmook Kang, He Sun, Sangwon Lee

Abstract: *Electronic commerce(e-commerce) becomes one of the most important modes for the world's economic growth after years of development. After being introduced into China, e-commerce has attracted widespread attention. At present, there are lots of e-commerce enterprises in China, which not only made outstanding contributions to China economic development but also generated great influences worldwide. Therefore, e-commerce is an indispensable business model in the development of modern enterprises and society. The development of cross-border e-commerce B2B is a great breakthrough of foreign trade in China, which made great contributions to the improvement of foreign trade turnover, the development of foreign trade enterprises as well as the economic growth. The research is conducted on this basis, summarizing and sorting out the successful models of e-commerce in China and the development of cross-border e-commerce B2B in detail.*

Index Terms: *Big Data, Electronic Commerce, B2B, Operation Model.*

I. INTRODUCTION

E-commerce is originated from the end of 1950s. The United States realized "paperless" office in virtue of electronic technique firstly, which is a start for the e-commerce development. In 1997, the United States issued Global E-commerce Policy Framework, which marks the formal development of e-commerce worldwide. After being introduced into China, Jiang Zemin showed that "e-commerce represents the development direction of future trade mode". Up to this day, e-commerce becomes one of the industries with the greatest application in the world, the fastest economic growth, and involving into most enterprises and consumers. From the perspective of China, enterprises (such as JDcom, Alibaba and Meituan) that are represented by e-commerce model are developed dramatically, which not only provides lots of working opportunities for the society but itself also becomes the enterprise group with the greatest development in China, playing an important role in China economic development and promotion of international status. The research is conducted on this basis, exploring the successful models of e-commerce in China and its influences

on the world economy. From the research angle, e-commerce possesses lots of models, and nearly all models achieved success in China. As e-commerce development and application constantly deepen, it is of a great realistic significance to research its successful models in China and influences on world economy. From the perspective of cross-border e-commerce, developing cross-border e-commerce is beneficial for expanding domestic demands and booming the market. The development of cross-border e-commerce is beneficial for middle and small-sized enterprises to gain more trading opportunities, introduce new technologies and funds, and expand market space effectively. It is also beneficial for expanding market consumption, improving market efficiency, promoting agricultural marketing sales, driving industrial products to the countryside, and improving the people's material and culture living standard. Therefore, the research conducted in this paper possesses a certain theoretical and practical value.

In the existing researches, Lu Shuqiang (2007) explored the status of e-commerce development in China and problems appeared in development process, and proposed some countermeasures and suggestions aiming at these problems, thus to facilitate its better development in China. Li Zhen and Li Yan (2007) analyzed the development status of China e-commerce and the main problems, and proposed the targeted development countermeasures of China e-commerce combining with development tendency. The research conducted by Jiang Liping (2008) explores the e-commerce status and the political issues of formulating and implementing the appropriate e-commerce, and analyzes the development status of China e-commerce and the corresponding countermeasures. Chen Yunbo (2013) sorted out the development status of China cross-border e-commerce starting from the development tendency of international e-commerce and proposed the solutions aiming at the problems, thus to further promote the development of China cross-border e-commerce. Huang Yiyuan and Wang Hao (2013) explored the market development path of cross-border e-commerce through researching the status and demands of China cross-border e-commerce market and the profit mode and development status of China cross-border e-commerce. Through analyzing the development of China cross-border e-commerce, Sun Yanyan (2014) found that there are lots of problems existed in China cross-border e-commerce at present, such as logistic barrier, complex customs clearance,

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Jangmook Kang, Department of Big Data & Industry Security, Namseoul University, Cheonan, Republic of Korea

He Sun, Department of Information Science, Wonkwang University, Iksan, Republic of Korea

Sangwon Lee, Department of Computer & Software Engineering (Institute of Convergence Creativity), Wonkwang University, Iksan, Republic of Korea, Email: sangwonlee@wku.ac.kr



insufficient trading credit, and lacking of professionals, and moreover, the corresponding countermeasures are proposed.

Starting from the status of China cross-border e-commerce, Zhu Kai (2014) summarized the advantages for China to develop cross-border e-commerce, indicated some problems need to be solved in development process, and proposed some targeted suggestions in the end.

II. DEVELOPMENT STATUS OF E-COMMERCE AND CROSS-BORDER E-COMMERCE B2B

A. Development status of e-commerce

First, status of development scale. The development of e-commerce brings huge influences on the global economic trade. By 2015, the turnover of the global e-commerce already broke through \$1 trillion, accounting 74% of the total amount of global business trade. E-commerce achieved great development opportunities in virtue of the fast and high-efficient advantages possessed by the internet. According to the related investigation and statistics conducted by the United States, the total volume of American TV shopping reached up to \$5 billion in 1999, and reached up to \$50 billion in 2001. Moreover, the total volume of the whole American e-commerce trade reached the striking \$200 billion in 2001. According to China investigation and statistics, the total volume of e-commerce trade within 1 year reached \$800 billion in 2015, and the number of merchants and consumers joining in e-commerce broke through 30 million. For other countries, Japan invested nearly \$500 million to promote the e-commerce related plan in 1998. Singapore set up the "No. 1 e-commerce" which is dedicated for e-commerce development and research in 2000, and moreover, there are 30 institutions signing the related activity agreements with Singapore.

Status of legal environment. In the legal environment of e-commerce marketing development, the government issued the laws such as Electronic Banking Business Management Act, Administrative Measures on Internet Information Services, Regulations on Internet Security Protection Technology, Law of Electronic Signature and Computer Software Protection Act aiming at the actual situation of China development. However, all in all, China laws on e-commerce are not perfect, and it mainly shows as that the marketing lacks of the related policies under e-commerce trade model, and moreover, the standardized management departments are not established yet. Therefore, the process of e-commerce marketing not only involves into the trading parties, but also includes industry and commerce department, banks, logistics, and the third party trading platforms, etc. Therefore, the coordinated developmental laws must form to guarantee the effective development of e-commerce marketing.

The famous American scholar Professor Schultz proposed the famous "4C" theory on the modern marketing mode

starting from e-commerce. The so-called 4C theory also includes marketing quickness, consumers' actual demands, consumers' fees, and the communication between consumers and sellers. The proposing of "4C" theory provides the important guidance significances for the development of marketing modes under e-commerce environment, and therefore, influenced by "4C" theory, all kinds of marketing modes and theories update unceasingly, and the associated research results are distributed constantly, which provides rich perfecting significances for modern market development. Later, 4RS theory is proposed according to the rules of modern market, which constitutes the relationship between sellers and consumers more perfectly. 4RS theory include customer relevance, market reaction, pursuit of return and relationship. Through completing the above market theories, the market research framework under e-commerce background is formed at present, providing important references for reform and all industries and enterprises in all countries.

E-commerce changes people's consumption habits to a great extent. According to statistics, the total number of internet users in China reached 780 million by the end of 2016, about 78.9% netizens used e-commerce for shopping. In China netizen structure, 81% netizens are aged under 30 and highly educated, this young consumers possess independent consumption ability, and require individually on product quality and service. The consumer group which takes this kind of netizens as the subject changes the traditional pursuits on commodity quality and price, and proposes higher demands on commodities from styles, modelling, packaging and service. As e-commerce develops, consumers have a clearer understanding on the actual situation of commodities, and therefore, the consumption psychology and habits also change a lot, coupled with that people's living standard improves constantly, people's consumption impulse and ability also improved unceasingly.

B. Research methodology

According to the data of e-commerce research center, the volume of China cross-border e-commerce is 5.4 trillion Yuan in 2015, with year-on-year growth being 27.9%, and among which, cross-border e-commerce B2B model accounts for 89% of the total volume, with absolute advantages. From scale of import and export, the export volume of China cross-border e-commerce B2B was 3.8 trillion Yuan in 2015, accounting for 80% of cross-border e-commerce B2B trade scale. It can be seen that the main role of China cross-border e-commerce B2B model is export. From the development tendency, the investigation shows that from 2008, China foreign trade growth has become very slow influenced by economic crisis and the global economic environment, and there are even trade deficit with individual countries, presenting the tendency of negative growth. However, under this background, China cross-border e-commerce grows constantly and rapidly, becoming the important support for China import and export trade.



As cross-border e-commerce B2B develops, there are large amounts of e-commerce enterprises appeared in China, and these e-commerce enterprises become the pillar for the development of China cross-border e-commerce B2B. It can be seen from figure 1 that Alibaba accounts the main share (42%) of China cross-border e-commerce B2B, ranking the second (38.44%) in global resource. From the perspective of

the specific enterprises, Alibaba is in the transformation period from information service platform to trade service platform under cross-border e-commerce B2B model, all kinds of business and functions are standardized constantly, helping middle and small-sized enterprises to conduct cross-border e-commerce B2B business smoothly; "Made in China" aims at making the world learn about "Made in China" more, and now, the layout in the aspects such as appearance, warehouse, channel and finance is completed.

The trading object of cross-border e-commerce B2B is foreign countries, and therefore, in virtue of this geographical advantages, coastal regions become the main developed regions of cross-border e-commerce B2B model. From its scale, coastland enterprises' cross-border e-commerce B2B accounts more than 70% in the country. Meanwhile, as the modern logistics develops in recent years, midland becomes the region where cross-border e-commerce B2B develops quickly. From the data, the annual growth of cross-border e-commerce B2B in midland has been over 50% since 2015, while the development in north and west is slow, so there is a great development space in the future. Europe, America and ASEAN, etc. are the regions where China cooperates with most frequently in terms of cross-border e-commerce B2B. Investigation shows that for the trade between Guangxi and Thailand, the value of Thailand's export toward Guangxi is \$830 million in 2017, with the year-on-year growth being 10.1%. China ranks the third in terms of amount in the countries and regions where Thailand imports agricultural products from, and among which, Guangxi possesses a total of \$1.01 billion, with the year-on-year growth being 11.21%. In recent years, as China cooperates with other counties, Russia and Brazil also started to positively conduct cross-border e-commerce B2B with China, and moreover, the government also adjusted the logistics and taxation, etc. aiming at the implementation of cross-border e-commerce B2B.

III. SUCCESSFUL MODELS OF E-COMMERCE IN CHINA AND ITS INFLUENCES ON MARKET AND ECONOMY

A. Summary of the successful models of e-commerce in China

E-commerce model is divided into B2B (among enterprises), B2C (between enterprises and consumers), C2C (among consumers), G2B (between the government and enterprises), G2C (between the government and individuals), and G2G (among the governments). The most successful

models of e-commerce in China will be summarized. B2B refers to e-commerce among enterprises, and B2B is a model which is applied most frequently and valued highly by enterprises in e-commerce. Enterprises seek for partners through the internet and complete all trading behaviors from ordering to settlement. From its concept, B2B refers to the e-commerce activities conducted among enterprises taking enterprises as the subjects, which is the earliest model of China e-commerce development and also the mainstream of modern e-commerce, accounting around 85% of the overall e-commerce market share. Under the modern market background, the competition among enterprises intensifies constantly, and through the e-commerce B2B, the enterprise market competition conditions can be improved effectively, establishing the enterprise competitiveness. The most successful representative of China e-commerce B2B model is Alibaba who possesses tens of thousands of merchants who purchase and trade in large scale directly through Alibaba platform, the platform includes thousands of goods in thousands of industries, and at present, Alibaba is the biggest B2B e-commerce platform in China, which also has broad influences worldwide.

B2C refers to business to consumers, realizing the docking between enterprises and consumers in virtue of e-commerce platform and giving priority to online retail industry. B2C model reforms the traditional consumers' consumption methods and philosophy of purchasing commodities to a great extent. Meanwhile, B2C also becomes the important modes for the present consumers' consumption in virtue of its specific internet spatiality and timeliness, and its status and turnover in e-commerce may surpass B2B model gradually. The successful cases of China B2C models include Taobao and JD.com which are the e-commerce B2C platforms with biggest scale and largest number of products and users in China. Among which, Taobao was founded in 2003, which is the biggest online retail platform in Asian-Pacific region, possessing over 500 million registration users, with the regular visitors being more than 70 million people daily, and the amount of online commodities being over 800 million pieces. The volume of business of Tmall goods owned by Taobao was over 168.2 billion Yuan in "Double Eleven" activity in 2017. JD Mall is the biggest integrated network retailer in China at present. In 2012, JD Mall accounted for 49% of China B2C market, and among which, the notable thing is that electronic appliances category proprietary commodities in JD Mall accounted more than 30% of the national electronic appliance market.

O2O model is translated into online, offline or online to phenomenon, it is the branch of B2C model, the concept of O2O model is very wide, and it involves into both online and offline. All in all, O2O model combines online and offline perfectly. Online stores and offline stores are docked through the internet, the internet is "grounded", thus consumers can enjoy the offline discount services when fully enjoying online discounts. Among which, the most successful representatives of O2O model are Meituan, and



Dianping, etc. Meituan was founded in 2010, and it is the most mature O2O website with most users in China. In 2017, the daily order quantity of Meituan was over 18 million, with cash reserve being over \$3 billion, active merchants being more than 3 million, and active consumers being more than 250 million, and at present, Meituan becomes the necessary platform for modern consumers' "food, shelter, travel and use".

B. Specific success of e-commerce in China

The basic relationship here is the interaction between them, and namely, enterprise informatization is the basis of e-commerce while e-commerce is the higher level content of enterprise informatization.

Starting from the development relationship, the informatization construction of enterprises is for the better development of e-commerce, from the level and contents, enterprise informatization aims at realizing enterprise informatization in production and operation in virtue of computer technology, enterprises' basis on production and operation is laid in virtue of the informatization, thus to conduct e-commerce. However, if the enterprise informatization construction is poor, it will be unable to conduct e-commerce, which is the basic relationship between them. Therefore, it can also be said that enterprise e-commerce is the further development outcomes of enterprise informatization, and from the perspective of effects, this kind of basic relationship promotes the development of enterprise number and e-commerce. The development of e-commerce promotes the growth of enterprise number. Exemplified by the third party "Tmall" of e-commerce, there were only 3.5 million Tmall merchants before 2005, however, up to 2014, the number increased to 39 million. The special space and time characteristics possessed by commerce made enterprises be able to sell without the sales channel possessed by offline stores, and even the making link is omitted. Therefore, it causes that more and more middle and small-sized investors have the opportunities for development. In recent years, the enterprise number in China has been growing, and there are also more and more enterprises applying e-commerce. It can be seen from table 1 that the number of China enterprises grows to 3.15 million in 2015 from 1.04 million in 2012, the share for enterprises applying e-commerce grows to 97% in 2015 from 21% in 2012, and therefore, it can be seen that enterprise informatization is the basis of e-commerce. As the informatization develops constantly, e-commerce also develops unceasingly.

E-commerce supports enterprises, and e-commerce can be promoted to develop with enterprise development, while e-commerce further improves the enterprise operation, and therefore, they are mutually supported. To be specific, enterprises provided the necessary technology and human resources for e-commerce, if enterprises don not have such kind of technology and human resources, e-commerce cannot

be developed obviously. The authentication infrastructure and payment technology of e-commerce all demand the necessary technology support. On the contrary, enterprises can develop further through e-commerce, thus to bring the effect of mutual support, e-commerce makes that the enterprise sales are not only limited to space, and it enables enterprises to generate a bigger sales volume.

E-commerce can promote enterprises. Through e-commerce, enterprises can be provided with necessary information and funds. From the current status, enterprises demand high costs for development, but enterprises' costs can be reduced through e-commerce. Meanwhile, enterprises can construct with the saved costs, e-commerce can provide necessary supports for enterprises during development, thus to improve the enterprises' development speed, which can be proved with the sales volume of e-commerce. The traditional channels are mainly direct selling, alliance business and distribution, these channels not only demand the expensive expansion costs and maintenance costs, but also demand a large amount of labor and materials to conduct daily management, however, most of China enterprises are middle and small-sized enterprises, and the costs generated by the traditional channels restrict the enterprise growth and development severely. However, the application of e-commerce brings China with a new channel. At present, there are 97% enterprises in China to sell and market their products through e-commerce, and meanwhile, more than 50% enterprises established their own websites, thus to better conduct e-commerce. Those channels taking e-commerce as the medium plays a more and more important role in enterprise sales.

IV. RESULTS AND DISCUSSIONS

Analysis on opportunities and problems of cross-border e-commerce B2B development

A. Opportunities of cross-border e-commerce B2B development

China joining into WTO made foreign trade develop rapidly. Reviewing China foreign trade development process, it is easy to find that China foreign trade ushered in the golden age for development in 2003. First, European developed countries and America put the development emphasis on high technology and finance at that time and transferred the high energy consumption manufacturing industry into other countries. China possessed cheap labor force and production materials, thus became the first choice for European developed countries and America to transfer industry. Foreign countries have a great demand, coupled with that China encouraged foreign trade development, so large amounts of middle and small-sized foreign trade enterprises generated. In 2003, China exchange rate regime is fixed exchange rate system, and the fluctuation of exchange rate was intervened officially, so there was small exchange rate risk for middle and small-sized enterprises to develop

foreign trade. After the global financial crisis, the overseas market demand of the international market was weak, China labor costs rose, labor dividends disappeared, and China foreign trade development ran into the bottleneck. However, at that time, cross-border e-commerce was developed rapidly. The development of cross-border e-commerce provides approaches for middle and small-sized enterprises and even micro enterprises to “walk out”, becoming new source of growth of China foreign trade. B2B model is the key point for cross-border e-commerce to develop, because it conforms to the stable growing needs of China foreign trade, and the needs of China structure adjusting, which is also beneficial for reducing the costs of China supervision and management and improving the efficiency for customs clearance of goods.

The country issued lots of advantageous policies aiming at cross-border e-commerce, aims at supporting and encouraging the development of cross-border e-commerce. In the end of 2012, the country took five cities including Hangzhou, Zhengzhou, Ningbo, Chongqing, and Shanghai as

the first batch of pilot cities for China cross-border e-commerce. From 2013 to 2014, China took nine cities including Shenzhen, Suzhou and Qingdao as the second batch of pilot cities for China implementing cross-border e-commerce in succession. In 2016, the state council set a new batch of cross-border e-commerce comprehensive test area in 12 cities including Tianjin, Shanghai and Chongqing. The establishing of these policies and pilots encouraged the development of cross-border e-commerce B2B greatly.

The coming of data era brought new opportunities for the development of cross-border e-commerce B2B model, which provides conditions for the transformation of China cross-border e-commerce B2B model from information service platform to trade service platform. For example, Alibaba international station can accumulate the trading data of buyers and sellers through providing comprehensive service for middle and small-sized enterprises, thus to provide accurate service for platform users. With data, the platform can evaluate suppliers according to trading accumulation, label the enterprises with good credit, and process some enterprise platforms with bad credit meanwhile. It is the same that purchasers also leave their trading records when trading through Alibaba international station, it can also grade purchasers, thus to avoid the behaviors that purchasers exaggerate purchase demand for squeeze down price. According to foreign trade data accumulation of service providers, the credit guaranteeing system published by Alibaba promoted the trust relationship between sellers and buyers, which further promotes the transactions. Difficult to finance has been the bottleneck for China middle and small-sized enterprises to develop, while the coming of big data era can make middle and small-sized enterprises use trading data as the gist for borrowing loans, solving the difficulties of hard to finance. Exactly the coming

of big data era made cross-border e-commerce B2B model can complete online closed-loop trading process.

‘One Belt and One Road’ promotes China enterprises to go out, which brings new opportunities for the development of cross-border e-commerce. Cross-border e-commerce can be taken as the forerunner during the implementation of “One Belt and One Road” strategy. Cross-border e-commerce can guide the trade and investment growth of countries alongside the “One Belt and One Road”, promote the division of responsibilities and cooperation among countries, realize the resource sharing among countries, and allow countries to open markets for each other. “One Belt and One Road” facilitates political communication, infrastructures’ connectivity, unblocked trade, financing and mutual intelligibility. It brings new opportunities for cross-border e-commerce development no matter at the macro level or the practical operation of cross-border e-commerce.

B. Problems existed in cross-border e-commerce B2B development

First, enterprises’ cognition. At present, there are lots of middle and small-sized enterprises in China, because of their own limitations, enterprises’ management basis is weak. No matter operators or staff, they both show weak informatization awareness and do not fully understand the importance of occupying the information market. In enterprises’ actual operation, the understanding on cross-border e-commerce B2B technology is insufficient, most China enterprises joining into cross-border e-commerce consider that e-commerce is the construction of enterprise website, it publishes enterprise product information through the website, and therefore, the enterprise websites’ effects are not developed reasonably, thus it causes low use efficiency of enterprise websites and too simple marketing modes; it can be seen in many enterprise websites that enterprises only hang the contents such as enterprise names, product names, contact methods and address into the internet, but lack of effective publicity on the important contents such as product quality, enterprise culture, and product actual situation, thus it causes that the effects generated by e-commerce platform is low.

Second, unreasonable resource input structure. The unreasonable resource input structure mainly shows in lacking of input on cross-border e-commerce. After investigation, the author finds out that in China enterprises joining in cross-border e-commerce B2B at present, the degree and level for using and participating in e-commerce are uneven, lots of enterprises still focus on traditional business, lacking of investment on cross-border e-commerce. Meanwhile, although a part of enterprises established their own e-commerce platform websites, their construction purpose is unclear, website cannot reflect enterprises’ images well, and website functions are also too simple, users cannot find the information they need at all in websites.

Third, enterprise informatization degree is too low. The related data investigation shows that because of the influences of traditional



operation modes and limitations of middle and small-sized enterprises, lots of enterprises' informatization construction is still at the early stage, the company only establishes the superficial computer network management and computer information system, this kind of informatization can only provide a certain management advantages and information advantages for enterprises, but it is hard to make enterprises truly operate cross-border e-commerce well. Therefore, China enterprises join in the process of cross-border e-commerce B2B, and the e-commerce informatization degree is too low.

V. CONCLUSIONS

All in all, the development of e-commerce is a reform worldwide. It not only drives China economic development but also drives the global economic development. In the future, as e-commerce application deepens constantly, the contributions of e-commerce to economy will not be enlarged, it demands us to constantly research and think, finding out the deficiencies existed in present e-commerce activities and construct, promoting e-commerce and cross-border e-commerce B2B to develop more prosperously. The conclusion is listed as follows: First, the successful models of e-commerce in China are the B2B model represented by Alibaba, B2C model represented by Taobao and JDcom, and O2O model represented by Meituan.

The specific success of e-commerce in China is that it facilitates the enterprise informatization basis development and drives and supports enterprises. E-commerce generates a great influence on China marketing, logistics development, channel, customer management, production and products, and moreover, it generates an important effect on the development of the world's economy. Second, influenced by the overall situation at present, there are four opportunities for the development of cross-border e-commerce B2B: traditional trade dividends disappear, cross-border e-commerce B2B model becomes the new source of growth, favorable policies encourage the development of cross-border e-commerce B2B, the big data era facilitates the transformation of cross-border e-commerce B2B, and "One Belt and One Road" strategy promotes the development of cross-border e-commerce B2B. Third, the problems existed in the development of cross-border e-commerce B2B include unreasonable enterprises' internal resource input, poor informatization degree, unsound logistics construction, incomplete safety technology countermeasures, lack of personalized service based on e-commerce, lack of talents and guarantees of e-commerce, and unsound finance and payment environment. Fourth, the countermeasures for the development of cross-border e-commerce B2B model include scientifically setting enterprise resource input, enhancing enterprise informatization construction, completing logistics construction, creating the safety environment of cross-border e-commerce B2B, enhancing the integration of cross-border

e-commerce personalized service, strengthening the cultivation of cross-border e-commerce talents, and perfecting the payment environment.

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