Research on Cross-border E-commerce Professional Capabilities and Training Modes of Talents

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Abstract—**In recent years, as a new cross-border trade, the cross-border e-commerce gains its popularity with an urge demand for excellent professions due to the rapid development of economic globalization and the Internet. Since the industry of cross-border e-commerce urgently needed versatile talents, many scholars have made a lot of research on professional capability and the cultivation of different talents in the cross-border e-commerce domain. This paper analyzes the literature of the professional capability and the cultivation of talents in order to dynamically grasp the research status and the trend of professional abilities and training modes of talents in the field of cross-border e-commerce, thereby putting forward measures and suggestions for training talents of cross-border e-commerce.**

Keywords—Cross-border e-commerce; Professional capability; Training of talents

I. INTRODUCTION

*Cross-border e-commerce is developing rapidly no*wadays. As a new type of cross-border trade, cross-border e-commerce is rocketing in China and will become the trend of foreign trade. According to the 2015 Economic Report issued by the United Nations Conference on Trade and Development (UNCTAD), cross-border e-commerce is expected to account for 30-40% of global trade by 2025, and will probably continue to rise in the following years. However, one of the bottlenecks restricting the rapid development of cross-border e-commerce nowadays is the shortage of talents. In recent years, the Ministry of Education has issued a number of important strategic measures to promote the deep integration among different schools, between schools and enterprises, and even among countries, through the establishment of various educational models that meet different needs. On the other hand, guided by the social demand and the actual demand for talents due to the development of national econom y and society, it is required to narrow the relationship among in dustries, optimize the structure of talent cultivation and strengt hen the training of talents in short supply. However, cross-border e-commerce is a crossed domain, which has both the characteristics of international trade and e-commerce, and also involves the language and cultural communication with foreign customers. Therefore, only those inter-disciplinary talents with foreign language ability can meet the needs of cross-border e-commerce enterprises.

II. LITERATURE REVIEW ON CROSS-BORDER E-COMMERCE PROFESSIONAL CAPABILITIES AND RESEARCH ON TRAINING MODES OF TALENTS

A. Literature review on cross-border e-commerce professional capabilities

On the basis of traditional e-commerce talent skills, Zhuang Xiaolan (2015) concluded that the core skills required for cross-border e-commerce talents generally included four levels: foreign language ability, network information technology, cultural and legal background, as well as logistics and financial related knowledge. Xu Yanyan(2015), from the perspective of business position, proposed the required professional competence and related knowledge to engage in cross-border e-commerce work . With the further development of cross-border e-commerce, Yu Wendan (2017) believed that the skills of cross-border e-commerce personnel were mainly divided into six parts: international logistics operation skills, cross-border e-commerce customer service skills, language communication and expression skills, network marketing skills, cross-border e-commerce data management skills and cross-border e-commerce innovation skills.

After some questionnaires and interviews of small and medium-sized cross-border e-commerce enterprises, Qian Linyi (2017) put forward the goal of cultivating cross-border e-commerce talents for small and medium-sized enterprises, which is to cultivate talents with 3D thinking, namely, economic thinking, foreign language thinking and Internet thinking. By investigating more than 50 foreign trade e-commerce enterprises in mainstream recruiting platform and Wenzhou Chamber of Commerce in Yingtan City, Yu Huijun (2018) concluded that cross-border e-commerce enterprises need innovative foreign trade talents who understand English, foreign trade and operation of cross-border e-commerce platform. Zhang Liming and Hu Juan (2016) proposed that

attention should be paid to the cultivation of foreign trade talents with intercultural communication skills. The cross-border e-commerce industry faces customers from different countries and regions all over the world. Different languages, cultures, politics, religious beliefs and thinking habits will affect the communication between the two parties of trade.

B. Literature review on cross-border e-commerce training modes of talents

With the development of cross-border e-commerce, in recent years, a large number of scholars have carried out some research on the innovation of training mode of talents in the field of cross-border e-commerce. However, Zhu Li (2016) thought that the cross-border e-commerce talents cultivated by curhigher education still had some deficiencies. He also suggested that inter-disciplinary foreign language talents should be trained in different directions and practical abilities should be emphasized. The "industrialized production" education mode in Chinese colleges and universities cannot meet the individual development needs of cross-border e-commerce learners in the era of "Internet +". Xiang Hongmei (2017) proposed her mode of cross-border e-commerce individual training, including the establishment of personalized curriculum system and optional courses according to different needs of students.

In respect of cross-border e-commerce talent training, Tang Demiao (2017), Wang Yan and Xuefeng (2017) put forward a talent training integration model through the analysis of cross-border e-commerce industry development, talent demand and professional ability, that is, school-enterprise collaborative training of cross-border e-commerce personnel. Guo Yao (2018) took the development of cross-border e-commerce in Jiangmen City as the background, analyzed the shortcomings of the traditional cross-border e-commerce personnel training mode, and took Jiangmen Vocational and Technical College as an example to explore the cross-border e-commerce personnel training mode based on Double Tutorial system. School tutors are responsible for the guidance of their professional theory knowledge and learning methods while enterprise tutors are responsible for providing places and detailed guidance for practical courses, internships and social practice. Under this model, school tutors, enterprise tutors and students can achieve a win-win situation.

III. CROSS-BORDER E-COMMERCE PROFESSIONAL CAPABILITIES

With the development of the Internet and the frequent occurrence of international trade, cross-border e-commerce is gradually becoming one of the hottest industries in the 21st century. However, everything has two sides. Due to the diversity and complexity of cross-border e-commerce, the industry is facing a serious shortage of professional talents. Employees engaged in cross-border e-commerce in foreign trade enterprises need to be proficient in computer technology, foreign trade related processes, network terminology and foreign languages, as well as to have a certain knowledge of economic law and accounting. Such talents are really rare for current Chinese labor markets.

In order to solve the problems of scarcity of cross-border e-commerce talents, unclear standards and difficulties in selecting talents for enterprises, the Ministry of Industry and Information Technology has set up a cross-border e-commerce tutor training and examination mechanism. Starting from the relevant examination content outline and based on previous studies by many scholars, the professional competence required by cross-border e-commerce can be clearly understood.

A. Research and development ability

As an elementary e-commerce talent, one should be proficient in e-commerce technology and have a good master of the latest development of e-commerce technology as well as possess certain modern business knowledge. He should also be able to design e-commerce systems with the usage of the most effective technical means to implement and satisfy the different characteristics and demands of business model of cross-border import and export platforms.

B. Marketing ability

Talents should be familiar with the cultural, economic and legal systems of overseas countries and regions, have a good knowledge of cross-border communication, be able to utilize a variety of network promotion methods to increase website page view and dissemination effect, and use platforms to sell product, develop customers and expand cross-border business markets.

C. Management and operation ability

Talents should be familiar with the operation rules of major international and domestic cross-border e-commerce platforms, have a good command of the basic business flow of international trade, be able to allocate manpower and product resources rationally, coordinate cross-border supply chains and to operate MIS and ERP software skillfully. They should also handle order transactions, financial payments, commodity transportation, customer complaints, after-sales services quickly and timely, and construct and manage the cross-border e-commerce operation team.

D. Data analysis ability

Talents should have solid business data statistics and mining capabilities to analyze, compare, connect and integrate data through a full range of market, product and consumer data survey or collection and collation of various data resources based on relevant theories for exploratory and validation analysis. Talents should also be able to solve various problems in cross-border e-commerce management and operation and to support the cross-border e-commerce operation and management mode driven by establishment of big data.

E. Business negotiation ability

Business negotiation-oriented cross-border e-commerce talents are high-level talents with broad knowledge and solid intercultural knowledge. They should be able to understand and respect cultural differences objectively, should be good at resolving intercultural conflicts. They should have intercultural business operation and management capabilities, be familiar with WTO laws and regulations and be skilled in mastering international business. Moreover, the ability to conduct trade

negotiations, avoid trade risks, open up international markets and resolve trade disputes is also important.

F. Others

From the surveys and analysis of cross-border e-commerce enterprises and graduates engaged in e-commerce related positions, we find that the orientation of undergraduate and graduate students can be generally divided into three categories: technology development, operation and promotion and mathematical analysis; undergraduate and graduate students are corresponding to 13 different positions, as detailed in Table 1; specific vocational ability see Table 2 for details.

TABLE I ANALYSIS OF CROSS-BORDER E-COMMERCE POSITION

Type of Cross-border E-commerce positions	Corresponding positions of bachelor and master degree
Research and development	Bachelor: developer and designer of website, PC and mobile website developer and maintainer Master: website needs and planner, e-commerce system architect
Operation and promotion	Bachelor: internet marketing specialist, senior sales consultant Master: business operation manager, network marketing manager, website operation manager
Data analysis	Bachelor: data analyst, market research commissioner. Master: data analyst, data modeler

TABLE II OCCUPATIONAL CAPACITY ANALYSIS OF CROSS-BORDER E-COMMERCE POSITIONS

Positions in cross- border e-commerce	Professional ability requirements
1.Web editor and artist	1. have excellent web interface design and color matching ability; 2. be proficient in related design software, such as Photoshop, Flash, Fireworks and Dreamweaver; 3. be able to communicate with the front desk architect
2.PC and mobile web page designer, website developer and maintainer	1. be familiar with XHTML+CSS, XML, JavaScript and other knowledge; 2. be familiar with web page standard H5, browser compatibility, SEO (search engine optimization); 3. be familiar with Android and IOS software development; 4. design the website structure according to the requirement of customer, carry on the project feasibility analysis and the plan compilation, formulate the project implementation plan
3. Website promotion and planner	1. be familiar with internet marketing and promotion, be familiar with the use of network tools; 2. be proficient in marketing planning, publicity and promotion of company products, be processed with strong planning ability; 3. have sales experience and image processing capabilities of cross border platforms such as express sell, Amazon and Dunhuang net; 4. have strong communication and presentation skills in foreign languages; 5. have strong business coordination and public relations skills
4. Online marketing specialist	1. be familiar with information release and dissemination process; 2. understand Internet marketing rules, be familiar with local culture and marketing activities; 3. have online shop sales experience and certain image processing ability; 4. have a good command of oral communication and writing skills
5. Market researcher	1. be proficient in all kinds of office software and information system software. 2. have data analysis ability; 3. have a strong communication and teamwork spirit, business development ability and strong sense of responsibility; 4. collect the required business information combined with network and field visits
6. Senior sales consultant	1. be able to develop, establish and manage customer resources; 2. be able to analyze the demand and market changes of cross-border import and export customers, and put forward suggestions for improving the sales strategy and services of enterprises; 3. have the ability to build communities and maintain good service and trust relationship with customers
7. Customer service commissioner	1. be familiar with online shopping, Internet B2C, C2C process, product shelving and description, online customer communication, sales and store management; 2. be able to translate product description into local language and communicate with foreign businessmen; 3. understand consumer psychology and shopping experience at home and abroad
8. Data analyst	1. have solid computer foundation and master at least one development language such as python/R/Java; 2. master the ability of modeling algorithms such as personalized recommendation, clustering, association, PageRank and so on 3. be familiar with Linux/Unix system and Hadoop/HBase/Hive/Storm distributed architecture 4. have a good spirit of teamwork and strong communication skills
9. Internet marketing manager	1. be familiar with each process of cross-border e-commerce import and export; 2. be familiar with customer management, commodity management and display management; 3. be familiar with the formulation and implementation of various business processes; 4. have strong team management skills, strong communication skills and appeal; 5. have the ability of market analysis and judgement

Table II, cont	
10. Internet operating manager	1. be familiar with all kinds of open source systems for website development, have rich experience in website development and management; 2. skillfully use database and business intelligence tools to tune and enhance the PV value of network background system and user interaction UI 3. be good at data analysis, logical thinking, have the ability of analyzing and solving problems clearly
11. Operating manager	1. be excellent at e-commerce/e-marketing project planning and operation, be familiar with the network culture and characteristics at home and abroad, have a wealth of network marketing promotion experience; 2. be able to plan, implement, control and execute the whole process of multinational supply chain. 3. have excellent foreign language and Chinese copy-writing skills, be able to write various programs and copywriters
12. Risk control specialist	1. have a strong industry analytical ability, have sensitivity to national policies and international politics; 2. understand the potential risk factors of cross-border e-commerce, be able to analyze various types of business risks in overseas countries dynamically and make classifications for risks; 3. be able to conduct risk identification and predication with the combination of various kinds of idata and tools, be able to put forward timely plans to prevent the spread of risk
13. Business negotiation representative	1. be familiar with the trade system and rules of overseas countries, conduct business negotiations with overseas businessmen on behalf of enterprises, and expand overseas markets; 2. follow the laws of overseas markets to carry out the strategic planning of enterprise internationalization, and provide plans of joint venture, holding and merging; 3. provide suggestions for enterprises to help them win strategic benefits through collaboration and integration of suppliers, distributors and brands at home and abroad

IV. CROSS-BORDER E-COMMERCE TALENT TRAINING MODES

Cross-border e-commerce is a new inter-disciplinary subject formed by the integration of multiple disciplines. Students need to have a good command of information technology, e-commerce, international trade, logistics management and other aspects of knowledge. At the same time, cross-border e-commerce field has typical innovation, entrepreneurship and uncertainty, so complex high-skilled cross-border e-commerce personnel training is a complex and open system, which needs a completely new thinking and design for university cross-border e-commerce talents training mode.

A. Design "five in one" training plan for cross-border e-commerce talents

In order to improve students' practical ability and professional quality, various practical teaching resources should be made full use of and the close combination of personnel training and cross-border e-commerce industry development should be insisted. The cross-border e-commerce programme of talents cultivation should be designed based on a progressive five-in-one model, that is, "theory teaching---cognitive demonstration---simulation-actual operation---certification assessment". The core course of the training program is the professional knowledge and theory of e-commerce, which is aimed at cultivating students' ability to analyze and solve problems. Characteristic courses are around building core competence of cross-border e-commerce and are combined with cross-border e-commerce professional certification requirements in order to meet cross-border e-commerce industry and enterprises' needs for personnel training .

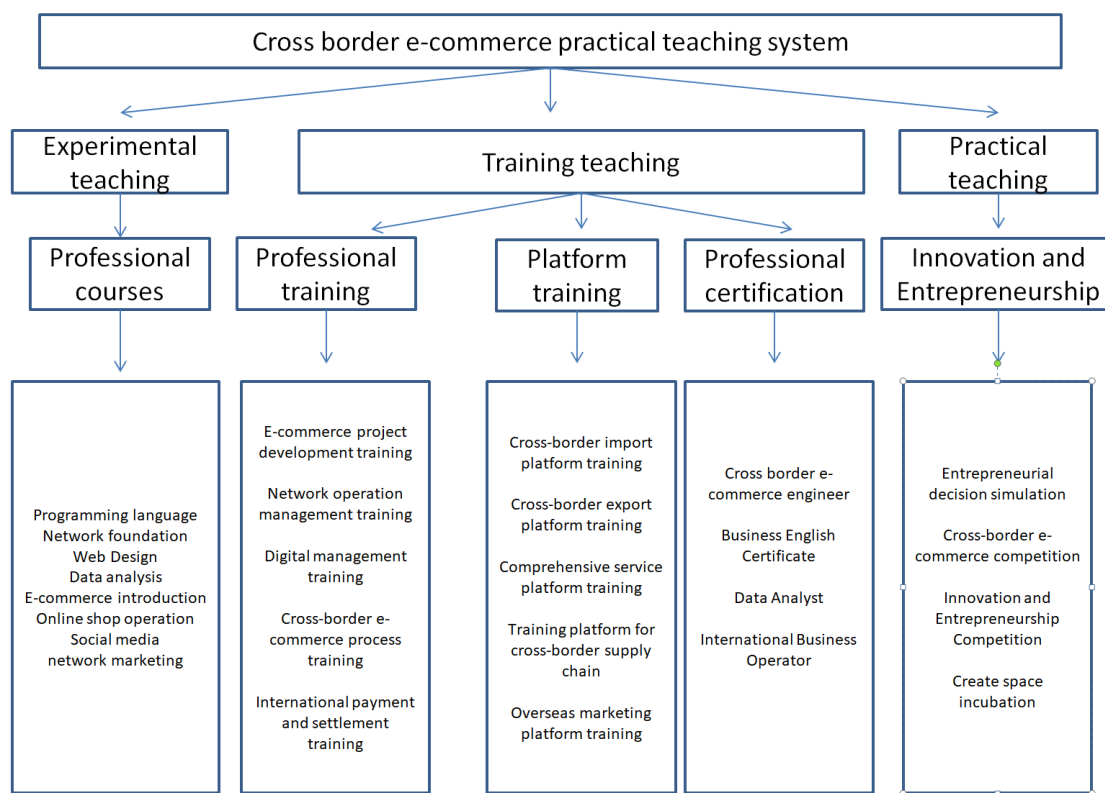The specific practical teaching system is shown in Figure 1.

Fig. 1   Framework of the cross-border e-commerce practice teaching system

Personnel training program is divided into e-commerce basic module, international business module, network technology module, innovation and entrepreneurship module, graduation design module, etc., to perform theoretical and practical teaching. The program takes the cultivation of ability and quality training as the core to break through some of the institutional constraints of personnel training in Colleges and universities, referring to the position requirements of cross-border e-commerce enterprises. At the same time, we should continue to expand international cooperation and exchange platforms, strengthen project cooperation with foreign universities and enterprises, such as professional case development, network course construction, student practice competition, publication of teaching and research papers, etc., so as to speed up the cultivation of comprehensive quality and international vision of students majoring in e-commerce and optimize personnel training. Cultivation model improves the quality of personnel training, and can contribute to the overall upgrading of the pilot professional teachers' teaching and research level as well as their professional quality.

B.   Construction of "ecological alliance" for cross-border e-commerce talent training

Cross-border e-commerce is a very large ecosystesm, and it is difficult to carry out the corresponding personnel training by colleges and universities alone, so the establishment of cross-border e-commerce personnel training, "ecological alliance", is the inevitable trend. Based on the characteristics and practical skills of the mainstream cross-border e-commerce platform, Alibaba, JingDong, Google, E-bay, Amazon and other well-known enterprises at home and abroad can be invited to

participate in the pilot professional teaching reform, textbook compilation, the conduction of various entrepreneurial innovation comprehensive training projects, such as Zhuozhi cross-border e-commerce supply chain, Juwen cross-border e-commerce CBE. Training, etc., which can help students to learn faster about the cross-border e-commerce operation rules, and cooperate with ventures to launch professional competitions based on actual projects, train and upgrade students' comprehensive professional ability and quality, help students to obtain business-recognized professional qualification certificates, and thus conduct cross-border e-commerce platform operation and personnel training.

'Eco-alliance' is a necessary approach to cultivate high-quality and innovative cross-border e-commerce talents. By integrating relevant cross-border e-commerce business resources in society and fully mobilizing various effective factors in the ecosphere, the theoretical knowledge learning, industry practice cognition and business innovation of cross-border e-commerce talents will be combined effectively. Through the collaborative operation of the ecological Alliance for talent cultivation, the study and application of knowledge are closely integrated with business innovation, and the "teaching factory" is established to ensure that students can truly learn, apply and innovate the business knowledge of cross-border e-commerce in the process of training, and constantly promote the combination of cross-border e-commerce theory and development practice.

C. Exploration of the "double certification" graduation system for cross-border e-commerce talents

Combining the different needs of various positions in cross-border e-commerce industry and enterprises for undergraduate and master's posts, the curriculum system with vocational ability as the core is built and the "double certificate" graduation system is implemented. By regulations, students, those who complete the required courses and obtain the required credits and have an experience of professional practice which is certificated by both schools and enterprises ,can obtain the diploma. At the same time, all students must obtain cross-border e-commerce engineer qualification certificate or recognized relevant professional qualification certificate.

TABLE III   CORRESPONDENCE ANALYSIS BETWEEN CROSS-BORDER E-COMMERCE PROFESSIONAL CERTIFICATION AND E-COMMERCE PROFESSIONAL COURSES

Professional certification and Training level	Career direction	E-commerce courses
Cross-border e-commerce engineer (Bachelor)	Technological development	Dynamic Web Design, Web Interface Design and Beautification, E-commerce Security, Mobile APP Planning and Implementation
	Operation and promotion	Online retail practice, online editing practice, business website operation, online customer service and management, online store operation and management, online marketing and planning, international trade practice, cross-border culture and communication, e-commerce law
	Mathematical analysis	Database technology, data engineering, commodity information collection and processing, network investigation and analysis
Cross border senior e-commerce engineer (Master)	Technological development	E-commerce website construction, e-commerce system planning and design, management information system, e-commerce security, data analysis language proficiency
	Operation and promotion	Introduction to E-commerce, Network Operations Management, Enterprise E-commerce Management, Consumer Behavior, International Trade Practice, International Payment and Settlement, Cross-border Logistics and Supply Chain
	Mathematical analysis	Business data analysis, data mining technology, big data modeling, business mode planning.

Cross-border e-commerce enterprises should be introduced into schools, such as Alibaba, JingDong, Google, E-bay, Amazon and other well-known enterprises at home and abroad, so that students can gradually participate in batches and learn through enterprise training. Professional teachers participate in the guidance of learning and practice; enterprises should arrange experienced front-line staffs as part-time teachers to complete the professional curriculum teaching, according to the teaching plan of the combination of production and teaching. Therefore the combination of school and industry, specialty and enterprise, curriculum system and post demand and teaching process and business scene can be realized. Schools should give full play to the advantages of enterprises and school specialties and cultivate professional talents who meet the enterprises' demand, adhering to the goal of combining industries and teaching – 'letting students enter enterprises' and 'letting enterprises enter campus', to promote the deep integration of professional teaching and cross-border e-commerce enterprises.

D. Development of "Creating space" for cross-border e-commerce talent growth

In addition to establishing traditional cross-border e-commerce experimental centers, training centers or research centers, establishing a "creating space" for cross-border e-commerce can be put into practice. "Creating space" is an important platform for innovative entrepreneurs to practice and its core elements include open resources, creative practice, cooperative communities and cooperation space. Open resources are the foundation for sustainable innovation activities, including open source hardware and software related to cross-border e-commerce operations and management, project libraries, innovative design tools and related equipment; creative practices include cross-border related salons, round tables, and informal learning activities such as exchanges, competitions, workshops; and cooperatives are an informal learning community; open and collaborative networks are the foundation of participatory innovation, including learning communities, interdisciplinary teams, and creative communities; cooperation spaces support participatory innovation with flexible spaces, including data laboratories, common workspaces, and so on. "Creating space" also provides entrepreneurial guidance, technical support, resource integration and various services.

Through the establishment of cross-border e-commerce "Creating space", an all-round crowdsourcing platform with a theoretical knowledge from the curriculum, practice, professional internship to comprehensive training, innovation and entrepreneurship can be built for students, which can fully realize the docking of production and learning. In addition to the basic knowledge and basic operating skills of cross-border e-commerce, students should concentrate on the education and innovative resources of the ecological alliance providing innovative and entrepreneurial platform for cross-border e-commerce talents through multi-party collaboration, and helping some students with cross-border e-commerce entrepreneurial dreams to actively participate in the development strategy " mass entrepreneurship and innovation" advocated by the state.

V. Conclusion

Cross-border e-commerce has become a new trend of China's foreign trade. As a new trade model, cross-border e-commerce industry needs the composite talents with various skills. However, due to the high demand for vocational skills and professional knowledge, there is a shortage of cross-border e-commerce talents in China. At present, there is still a serious disconnect between the cross-border e-commerce talents training in most universities and the actual needs of the industry, which cannot fully meet the post quality requirements of cross-border e-commerce enterprises. The matching professional talents training system is still in an exploratory stage.

Therefore, this study has conducted in-depth research on the professional competence and the training model of cross-border e-commerce talents. As for professional competence, this paper summarizes several types of professional competence needed by cross-border e-commerce from several aspects, such as technology development, marketing and promotion, management and operation, mathematical analysis and business negotiation, putting forward corresponding specific positions according to specific positions such as business negotiation representatives and risk control commissioners. Since the training of complex high-skilled personnel is a complex progress, this study puts forward some proposals from the aspects of the innovation and entrepreneurial activities about the personnel training program, the "ecological alliance" training model, cross-border e-commerce, the optimization of the personnel training system and other dimensions, highlighting the importance of school-enterprise cooperation. Thus, on one hand, the surface can integrate many kinds of resources. On the other hand, it can better realize the docking between schools and enterprises. In the future research, through school-enterprise cooperation and vocational education, more practical personnel training strategies can be formulated according to specific positions and based on the closer combination of "production" and "learning", "industry" and "teaching" can be integrated more deeply, "industry-university alliance", industry-university linkage model can be established, and construct innovative cross-border e-commerce in colleges and universities. Personnel training system can realize the win-win situation of enterprises, schools, students and society, and meet the multi-level needs of the future cross-border e-commerce industry in China.

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