

Research Article

Research on Innovative Development of Crossborder e-Commerce under the Background of Wireless Communication and Internet of Things

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After the epidemic has entered the normalization stage, people's demand for online shopping and transactions has gradually increased, crossborder e-commerce has also developed more rapidly, and wireless communication and Internet of Things technologies have also been further upgraded with the update of electronic equipment. Technology has increased the smoothness of communication between overseas and domestic, and the Internet of Things has provided technical support for crossborder e-commerce trade traceability, trade security, and supply chain management. However, at present, crossborder e-commerce still has imperfect logistics systems and passive transactions, low income, etc. In order to solve the existing problems, this paper takes Shenzhen as an example, through a combination of literature analysis and practical investigation, and on the basis of analyzing the existing problems of crossborder e-commerce, an innovative scheme of crossborder e-commerce combining wireless communication and Internet of Things technology is proposed. The test results of the innovative scheme show that, compared with the unimproved scheme, this scheme greatly improves the income of e-commerce enterprises.

1. Introduction

1.1. Wireless Communication. Due to the complex modern communication environment, wired network transmission cannot meet the needs of the times [1], and wireless communication technology has gradually risen in the past 100 years. Wireless communication means that information transmission between two devices is not completed through cables or other entities [2]. Typical wireless communication devices in life are similar to mobile phones and phone watches. Nowadays, the application range of wireless communication is also more abundant, among which applications such as wireless keyboard and mouse sets, car keys, GPS positioning devices, Bluetooth smart home devices, and wireless earphones have become popular nowadays [3]. The types of wireless communication technologies include Bluetooth, WiFi, Zigbee, and GPS [4]. In the future, with the advance-

ment of electronic devices and corresponding communication protocols, new wireless communication technologies will be produced [5].

1.2. Internet of Things. The concept of the Internet of Things technology has been prevalent in the academic world in the 1980s. In recent years, the branch applications of the Internet of Things technology have gradually entered all walks of life [6], and the idea of the Internet of Everything has been understood by most people. In fact, the Internet of Things represents configure basic processing units for electronic devices, so that electronic devices have the ability to communicate with each other, thus forming a networked chain between objects [7]. The definition of networking is to use radio frequency identification RFID, global positioning system GPS, and other message sensing equipment, according to a certain protocol, to connect any item through the

Internet of Things domain name, information exchange, and communication [8], in order to achieve intelligent identification, positioning and tracking, and a network concept for monitoring and management [9].

1.3. Crossborder e-Commerce. As a prosperous big city, Shenzhen has a good business environment. Various departments jointly supervise and manage merchants and have cultivated leading crossborder e-commerce enterprises such as Huawei, Tencent, Ping An, China Merchants, Vanke, and Zhengwei, accounting for the national crossborder e-commerce [10]. More than half the volume of e-commerce [11–13] were as follows. As a new trade model, crossborder e-commerce can promote the upgrading of industrial structure. It is a hot spot for the fast-developing industry and social economy in recent years. Because of its openness, immediacy, and paperless characteristics, crossborder e-commerce has gradually become active around the world. In addition, crossborder e-commerce is also of great help to the development of small and medium-sized enterprises that develop foreign trade business in my country [14, 15]. It provides a new trading method for enterprises and reduces many complex links in transactions, which invisibly reduces production costs and saves funds for enterprises. These advantages have enabled my country's crossborder e-commerce industry to develop rapidly in recent years [16, 17].

As can be seen from Figure 1, the growth of my country's crossborder e-commerce field has maintained a high growth rate. Let us look at the following set of data.

In Table 1, you can see the main countries and regions of my country's crossborder e-commerce exports, of which the United States, Britain, and France have always been in the forefront, and Russia has shown a strong growth trend in recent years.

2. Problems Existing in the Current Development of Crossborder e-Commerce

2.1. Crossborder e-Commerce Product Counterfeiting Is Rampant, and Logistics Efficiency Is Low. With the continuous development of crossborder e-commerce in Shenzhen, the number of merchants and e-commerce platforms continues to increase, and the variety of goods is dazzling. It can be said that there is nothing that cannot be bought on the platform [18, 19]. As of February 2022, there were 3300 crossborder e-commerce companies on record, with 173,400 kinds of products on file, mainly including cosmetics, food, and disposable hygiene products. These products all have the common characteristics of large variety and small quantity [20, 21] But since 2015 to 2018, the municipal government has allocated a total of 15 million yuan to Shenzhen Customs to test the quality of crossborder e-commerce products. A total of 1,334 batches of samples were taken for testing, and more than 40,000 tests were carried out. Among them, there are 357 batches of unqualified samples, accounting for 26.76% of the total. Unqualified situations include various serious problems such as wrong or unlabeled labels, wrong shelf life, and use period, and the

logistics efficiency is extremely low, the application of new technologies is too small, and the application rate of new technologies in logistics in recent years does not exceed 15%. The penetration rate of new technologies such as wireless communication and the Internet of Things in logistics is shown in Table 2.

The low application rate of new technologies may be the reason for the high price charges. The cost of technical services and operation and maintenance is also relatively high, which has a great impact on the cost of the logistics industry. The average charge per order combined with the integrated service of Internet of Things technology is shown in Figure 2.

As can be seen from Table 2, the transaction logistics cost of enterprises has increased year by year in recent years.

It can be seen from Table 3 that my country's total import and export volume have been growing steadily in recent years, but the proportion of exports far exceeds that of imports, indicating that my country should actively adjust the industrial structure and promote the improvement of exports.

2.2. No Core Brand, Mostly Small and Medium-Sized Enterprises. In recent years, with the emergence of mass media like mushrooms after a rain, various companies have focused on building their own brands, and those companies that already have brands have focused on how to make their brands bigger and further. This shows how important brand power is, which can directly affect the success or failure of an enterprise. In statistical modeling of the current e-commerce enterprises in Shenzhen through the genetic algorithm, it is found that most of the enterprises are small and medium-sized enterprises, and there is no core brand. The specific calculation formula is as follows.

$$(b_0 \cdots b_{20} b_{21})_2 = \left(\sum_{i=0}^{21} b_i \cdot 2^i \right)_{10} = x^t, \quad (1)$$

$$x = -1 + x^t \frac{(2 - (-1))}{2^{22} - 1}.$$

Using the characteristics of the Internet to promote brand popularity has become a popular practice in this era. However, looking at the existing crossborder e-commerce companies in Shenzhen, most of them are small and medium-sized. Although the number can be ranked first in the country, the quality is not satisfactory. The leading e-commerce companies that play a role in demonstration and cohesion are very few. Scarce is as follows. There are many crossborder e-commerce companies in Shenzhen, including the top 100, but none of these strong crossborder e-commerce companies are headquartered in Shenzhen, such as NetEase Kaola Haitao, Alibaba, and AliExpress. And those companies headquartered in Shenzhen are still immature and do not have strong market competitiveness and influence for the time being; so, they cannot be used as business cards of Shenzhen. Another problem is that these enterprises are small in scale, resulting in scattered business and fragile capital chain, which in turn makes them unable

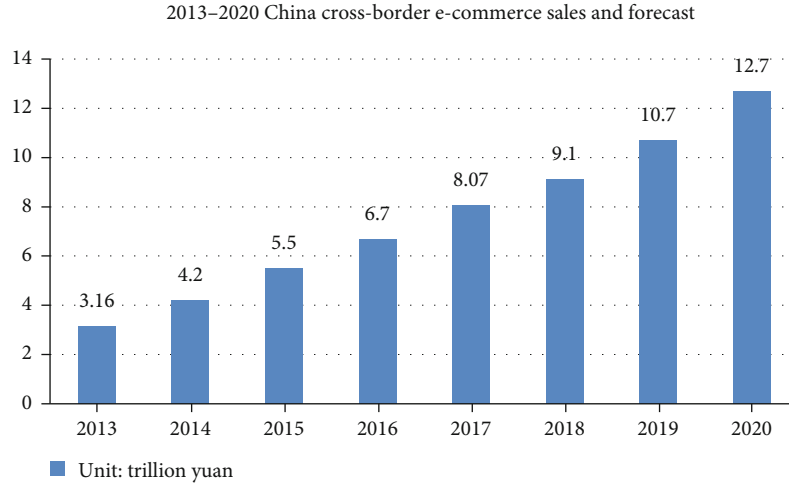


FIGURE 1: 2013-2020 crossborder e-commerce sales and forecast in China.

TABLE 1: 2018-2021 China’s crossborder e-commerce exporting countries.

| Year Country rate | 2018 | 2019 | 2020 | 2021 |
|----------------------|--------|--------|--------|--------|
| United States | 16.50% | 17% | 15% | 17.50% |
| Russia | 4.20% | 11.00% | 12.50% | 11.30% |
| France | 10.40% | 11.40% | 13.20% | 10.40% |
| United Kingdom | 8.70% | 8.70% | 8.40% | 8.70% |
| Brazil | 2.20% | 6.50% | 6.50% | 5.60% |
| Canada | 4.50% | 4.70% | 4.50% | 4.50% |
| Germany | 3.70% | 3.40% | 3.70% | 3.70% |
| Japan | 6.60% | 3.10% | 3.10% | 3.40% |
| Korea | 3.50% | 3.00% | 2.80% | 2.50% |
| India | 1.40% | 1.60% | 1.60% | 2.40% |
| Others | 38.40% | 33.50% | 30.20% | 27.50% |

TABLE 2: The penetration rate of new technologies such as wireless communication and the Internet of Things in logistics.

| Year | Penetration rate |
|------|------------------|
| 2018 | 12.50% |
| 2019 | 12.80% |
| 2020 | 13.50% |
| 2021 | 14.00% |

to develop economies of scale, fall into a vicious circle, and cannot resist greater risks in international trade 2021. The types of commodities traded in e-commerce in Shenzhen in 2018 are shown in Figure 3. The data shows that the types are rich, but there is no obvious core enterprise.

As can be seen from Figure 4, among the categories of crossborder e-commerce transactions in Shenzhen, electronic products ranked first, accounting for more than one-third of the share, followed by clothing and food and other products with lower added value. It shows that the export structure needs to be further optimized.

2.3. *It Is Difficult for Enterprises to Pay Foreign Exchange and Settle Foreign Exchange.* As long as it is a transaction, there is a payment involved. Fund payment in crossborder e-commerce is more complicated, and it is not so easy to solve this problem [22, 23]. First, many crossborder e-commerce companies have to use illicit means to exchange foreign currency despite the cumbersome settlement of funds and the cost of cooperating with third-party payment service companies. According to relevant data, among the 12 billion yuan annual transaction volume in Shenzhen, 90 crossborder enterprises are involved, and only less than 100 million yuan of funds are obtained through formal channels. In this way, the company’s financial statements will definitely be affected, and it will directly cause the company to lose the trust of the bank and cannot go to the bank for financing or listing. How can it become bigger and stronger? In terms of foreign exchange settlement, according to the current regulations of the state, the annual foreign exchange settlement limit for each person is only 50,000 US dollars. The small amount of foreign exchange settlement and the troublesome foreign exchange settlement have greatly affected the business of some export enterprises. They have to borrow accounts for foreign exchange settlement or exchange foreign exchange through underground banks. Continued development will not only directly damage the interests and reputation of enterprises but also breed some illegal and criminal acts [24, 25]. The top ten transaction values of crossborder e-commerce export commodities in 2021 are shown in Table 4. It can be seen from the table that the annual payment volume of crossborder e-commerce is huge.

Second, crossborder electronic payment services involve many individuals, including online banking and third-party payment. For B2B transactions with relatively large amounts, online banking payment is generally used. Because the payment and receipt must be in the order of whoever comes first, the probability of financial risk in the transaction increases. Both payment methods bear a common risk; that is, online payment information is illegally stolen. Similar situation is shown in Table 5.

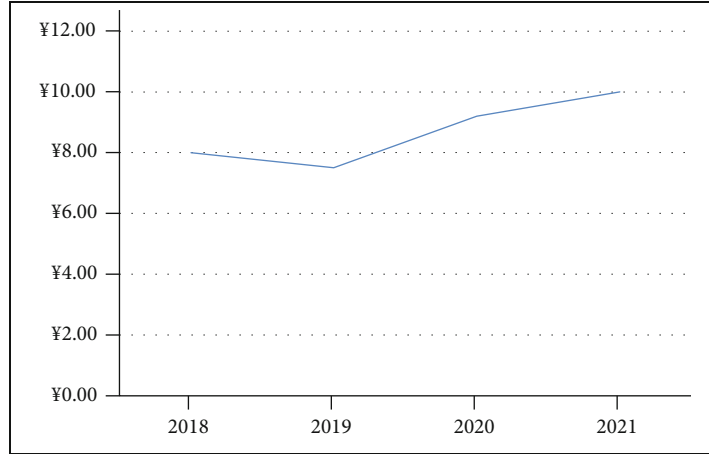


FIGURE 2: The average charge per order for integrated services combined with IoT technology (yuan).

TABLE 3: Three groups of test data.

| Variable | Test 1 | Test 2 |
|----------|--------|--------|
| p | 0.12 | 0.22 |
| D | 0.36 | 0.28 |
| A | 0.67 | 0.68 |
| G | 0.54 | 0.46 |

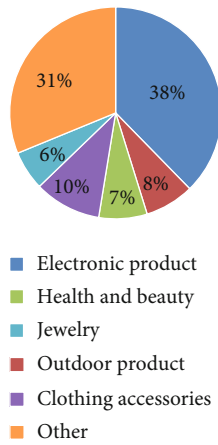


FIGURE 3: Types of commodities traded by e-commerce in Shenzhen in 2021.

2.4. The Shortage of Professional Talents Is Extremely Serious. At present, some major e-commerce platforms, such as AliExpress, Amazon, and Wish, need talents not only to master one skill, but not only to have excellent technology but also to have foreign language ability and master some necessary international practices. Legal knowledge, not just knowing e-commerce, can be competent for the job. At present, there is a large gap in crossborder e-commerce talents. First, there is a large gap in supply chain management talents, followed by product R&D and research talents, IT, and art talents. The proportion of e-commerce operation,

promotion and sales, and comprehensive talents is relatively small. The lack of an effective talent training mechanism and the growing demand for talents from various e-commerce companies have led to a large talent gap in crossborder e-commerce, especially for large e-commerce companies. The talent gap of domestic B2C online retail brands in 2021 is shown in Figure 5.

As can be seen from Figure 5, Tmall occupies half of the domestic B2C online retail brands, followed by <http://jd.com/>, accounting for about a quarter, and the total of other companies is less than 20%.

Secondly, according to the 2018 industry research report, it can be seen that the demand for e-commerce talents is very strong, there are many e-commerce enterprises with talent gaps, and 33% of enterprises are in urgent need of comprehensive high-end talents and so on. It can be seen that operators are very important to every e-commerce company, accounting for nearly half of the total demand.

Finally, companies face the problem of talent gaps as well as hiring pressures. In recent years, most of the fresh undergraduates have high salary requirements, and most of the students majoring in e-commerce are reluctant to engage in professional-related jobs after graduation and feel that e-commerce is boring. The brain drain reflects that some companies are not doing well in terms of welfare treatment and incentive mechanism. The resignation of talents in one year is serious, with 24% of companies below 10%, 37% of companies with 10-20%, 21% of companies with 20-30%, and 15% of companies with 30-50%, and it can be seen that employee Churn is also a big problem for most businesses. In order to handle employee relations well, companies must create their own corporate culture and related management systems, so that the company can become a warm and affectionate place instead of a cold workplace.

The decision tree algorithm is used to model the brain drain of e-commerce in the context of wireless communication and the Internet of Things. It is found that if crossborder e-commerce does not take action in time, more talents may be lost. After two sets of data tests, the component data as shown in Table 3 are obtained. The data in Table 3 shows that the e-commerce brain drain situation is

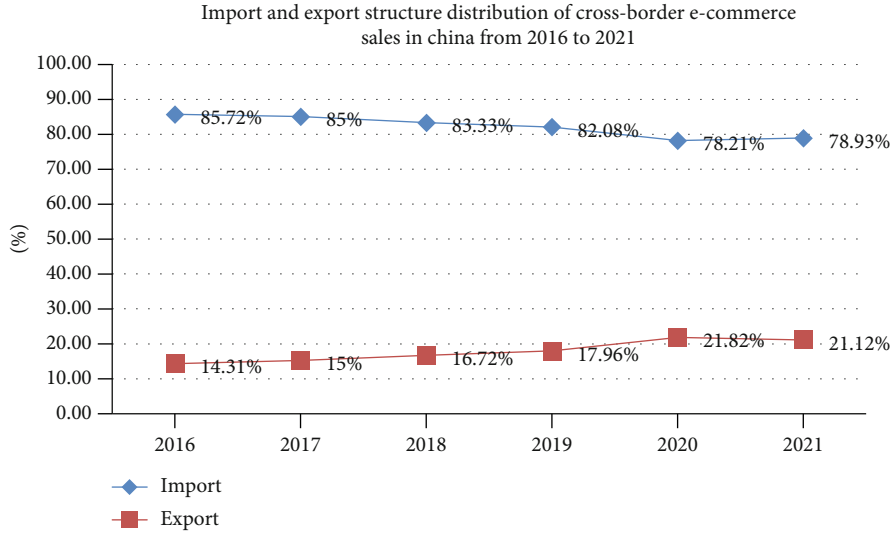


FIGURE 4: Distribution of import and export structure of China’s crossborder e-commerce sales from 2016 to 2021.

TABLE 4: Top 10 transaction values of crossborder e-commerce export commodities in 2021.

| Number | Commodity type | Transaction value (100 million yuan) |
|--------|------------------|--------------------------------------|
| 1 | Costume | 250 |
| 2 | Travel bags | 170 |
| 3 | Plastic products | 120 |
| 4 | Glass | 67 |

TABLE 5: Crossborder e-commerce transaction payment information illegally stolen and the proportion of security incidents.

| Year | 2019 | 2020 | 2021 |
|-------------|--------|--------|--------|
| Growth rate | 8.00% | 9.58% | 11.94% |
| Proportion | 19.51% | 27.57% | 26.99 |

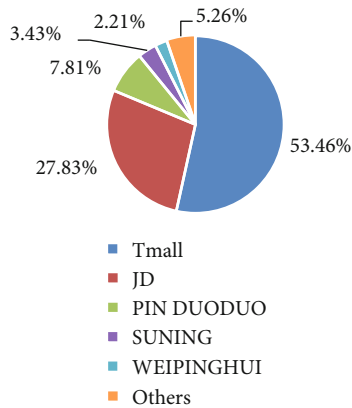


FIGURE 5: Talent gap data of domestic B2C online retail brands in 2021.

becoming serious, and companies should pay attention to this problem and find ways to retain talent.

3. Innovative Development Strategies of Crossborder e-Commerce under the Background of Wireless Communication and Internet of Things

3.1. Strengthen Quality Supervision and Reduce Logistics Costs. The government should work with enterprises to create a fair and just market. Crossborder e-commerce is carried out through the Internet. Due to its own characteristics, the Internet has caused a series of problems that the trust between the two parties is unstable. This also restricts the development of crossborder e-commerce, and news that counterfeit and shoddy products are detained from time to time. Trust is often an important factor in attracting customers to stop. In recent years, import and export sales have changed significantly, and data shows that e-commerce sales are greatly affected by counterfeiting. Among them, the distribution of the import and export structure of China’s crossborder e-commerce sales from 2016 to 2021 is shown in Figure 5. Therefore, Shenzhen is constantly improving it on the basis of the already established crossborder e-commerce inspection and certification alliance. In the follow-up, relevant rules and regulations can be established to increase penalties for some e-commerce companies in the alliance for violations of regulations and other behaviors, so that enterprises can consciously abide by the rules; improve the self-discipline mechanism of the industry, establish a “blacklist;” and formulate collections belonging to the alliance; sign the industry self-discipline declaration and accept the joint supervision of the public; establish an exclusive alliance information platform, regularly release the quality index of crossborder e-commerce products; and publish e-commerce companies that violate regulations, etc., to provide various departments and all parties in the

society. Third-party inspection and certification result information build a fair and orderly inspection and certification market and introduce more relevant comprehensive laws.

Continue to improve the alliance and related policies. The alliance can strengthen the supervision of enterprises and improve the quality of crossborder e-commerce products and plays a crucial role in the development of Shenzhen's crossborder e-commerce, which is embodied in the close formation of the alliance with crossborder e-commerce enterprises and government departments. Contact, manage, and supervise those merchants who want to enter the platform, provide corresponding inspection and certification consulting services, supervision, and assistance, and improve the entry threshold of crossborder e-commerce platforms.

3.2. Establish a High-Quality e-Commerce Platform and Cultivate Leading Crossborder e-Commerce Enterprises. Shenzhen urgently needs to establish a high-quality e-commerce platform that can protect the interests of the majority of crossborder e-commerce enterprises. Specifically, in terms of management objects, in addition to protecting general intellectual property rights, we should also strengthen domain name management, trade secrets, code management, etc. Take risks and seek convenient and effective ways to resolve disputes during and after the event and constantly improve the working mechanism of intellectual property protection, which is conducive to letting companies in crossborder e-commerce platforms know that their intellectual property rights can be protected, so that companies have motivation. To build your own brand, let crossborder e-commerce blossom.

Although there are more than tens of thousands of crossborder e-commerce companies in Shenzhen, accounting for half of China's crossborder e-commerce, the truly influential large-scale enterprises have disappeared, and it is urgent to cultivate leading crossborder e-commerce companies. In recent years, the diversification of consumer demand has made crossborder e-commerce more and more large-scale, and related orders have become small and fragmented, which gives enterprises under the B2C model greater development potential. Enterprises under the B2C model rely on e-commerce platforms to develop. Therefore, Shenzhen must establish a high-quality crossborder e-commerce information platform in order to integrate effective resources in the society and promote the circulation of information to facilitate transactions. At the same time, the Shenzhen Municipal Government can also make full use of the superior geographical location of Qianhai Bay and the resources of the two super airports and seaports to attract investment and gather related industries, improve the construction of Shenzhen's e-commerce infrastructure, and cultivate and support the greater efforts which have been made in crossborder e-commerce leading enterprises with brand effect.

3.3. Establish and Improve the Payment and Settlement System. Establish a bank settlement system for payment problems. "ICBC Qianhai Cross-Payment" established by ICBC Qianhai Branch solves the problems in foreign

exchange payment and settlement for crossborder e-commerce enterprises. ICBC Qianhai Branch started the research and development of "Cross-Payment" at the end of 2014. Version 1.0 was launched in early 2015, and version 4.0 was launched on July 9. The original version only involved the collection and payment channels of crossborder e-commerce, but the improved version gradually added more and more functions, such as transaction information review system, marketing services, and payment institution system connection. Version 4.0 has electronic port three docking services. In the future, crossborder clearing and settlement centers, electronic supply chain financing, and other functions will be added.

Upgrade and optimize the system to improve the efficiency of foreign exchange settlement. Now, ICBC Cross-Pay provides faster crossborder B2B payment services and more abundant sunshine custom clearance functions, establishes a more efficient domestic and overseas account management and fund management system, and realizes one-stop, sunshine, online, and offline integration. Financial services provide stronger support and guarantee for crossborder e-commerce enterprises to conduct business. "Cross-Pay" can compare the offshore market price for preferential settlement, helping enterprises to avoid exchange rate risks; secondly, it simplifies the process, uses electronic orders as the basis for settlement, collects payments first, and then checks the documents afterwards, which greatly improves the efficiency of transactions; in addition, it also has a $t + 0$ settlement system, and RMB can be received on the same day, which reduces the risk of backlog of funds for enterprises and improves capital liquidity.

3.4. Accelerate the Training of Crossborder e-Commerce Professionals. Strengthen the cooperation between enterprises and universities. The development of crossborder e-commerce is inseparable from the assistance of colleges and universities, and it is necessary to improve the closeness of cooperation between crossborder e-commerce enterprises and various universities and vocational colleges. Local universities in Shenzhen should offer relevant courses, train specialized e-commerce talents, and deliver talents for crossborder e-commerce. It is also necessary to formulate a targeted training plan, focusing on the combination of curriculum and practice, so that students no longer stay in the knowledge of textbooks but have a heart and a strength for practical work. For the senior graduates entering the internship period, the school should provide more opportunities for them to go to the industrial park talent training base for training and learning, so that they can master the skills required for e-commerce, and after the internship period, they can prepare for crossborder training. Environmental e-commerce provides comprehensive talents. Secondly, those in-service crossborder e-commerce practitioners should also be regularly trained to update their knowledge, keep up with the development of e-commerce, and continuously strengthen the professional knowledge and technical level of practitioners.

Strengthen the construction of urban infrastructure and attract talents from all over the world. The government can

also invest funds to introduce highly educated talents, such as e-commerce doctors and other talents, to guide local crossborder e-commerce enterprises; it must also improve the living comfort of the city, and foreign excellent e-commerce talents are willing to settle in Shenzhen; actively exchange and learn from the successful and advanced experience of crossborder e-commerce in other countries and promote the professional level of Shenzhen's crossborder e-commerce talents by summarizing the actual situation of Shenzhen's local e-commerce enterprises and combining experience.

4. Conclusion

The current pattern of economic development has gradually created changes, and the development of crossborder e-commerce is very rapid. In order for relevant policies to adapt to the development of crossborder e-commerce, it is necessary for relevant departments to continuously improve according to the development progress. In actual development, crossborder e-commerce should make good use of the favorable policies of the government and the advantageous geographical location of enterprises, establish a crossborder e-commerce development model that can adapt to the development of modern society, and make good use of policies to attract and encourage industries to settle down. Payment and financial service companies have settled in, allowing crossborder e-commerce to flourish in contemporary times. It is foreseeable that crossborder e-commerce can form a unique ecological area, and any enterprise, industry, product, or service in this area will become a vital part, bringing new vitality to our way of life. Similarly, the success or failure of crossborder e-commerce also depends on whether the enterprise is brave, daring, and actively innovating. In the era of technology, we must pay attention to innovation, in order to make the development of crossborder e-commerce faster and further, and walk out of its own path. Of course, we must also see some bottlenecks in the development of crossborder e-commerce. It is necessary to continuously overcome difficulties, keep pace with the times and use various methods to develop crossborder e-commerce, implement the construction of a comprehensive service system for crossborder e-commerce, and allow more e-commerce enterprises to go global. We have reason to believe that with the help of the government, the efforts of various crossborder e-commerce companies, and the good social business environment, Shenzhen's crossborder e-commerce will definitely develop better.

Nowadays, the development of various electronic-related technologies is also accelerating. Among them, wireless communication technology, as a new communication technology, has penetrated into all aspects of people's lives, and the Internet of Things technology has entered the list of daily equipment for every citizen. As a branch of the Internet of Things, home furnishing has become a home system that every citizen wants to have. In the context of the times, crossborder e-commerce should also combine new technologies to solve existing development problems, especially the increasing demand for online shopping and transactions,

and the Internet of Things provides technical support for crossborder e-commerce trade traceability, trade security, and supply chain management. However, at present, crossborder e-commerce still has problems such as imperfect logistics system, passive transactions, and low returns. In order to solve the logistics problems and revenue problems, this paper proposes an innovative plan for crossborder e-commerce combining wireless communication and Internet of Things technology on the basis of the theoretical analysis of the Internet of Things and wireless communication. The results show that compared with the unimproved scheme, this scheme greatly improves the income of e-commerce enterprises.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

It is declared by the authors that this article is free of conflict of interest.

References

- [1] S. P. Goldman, H. van Herk, T. Verhagen, and J. W. Weltevreden, "Strategic orientations and digital marketing tactics in cross-border e-commerce: comparing developed and emerging markets," *International Small Business Journal: Researching Entrepreneurship*, vol. 39, no. 4, pp. 350–371, 2021.
- [2] Finance- Electronic Commerce, "Study data from South China University of Technology update knowledge of electronic commerce (product plus logistics bundling sale and co-delivery in cross-border E-commerce)," *Internet Business Newsweekly*, vol. 88, 2020.
- [3] W. Zhu, R. Yan, and Z. Ding, "Analysing impulse purchasing in cross-border electronic commerce," *Industrial Management & Data Systems*, vol. 120, no. 10, pp. 1959–1974, 2020.
- [4] F. Haoran, H. Li, and Z. Li, "Analysis on cross-border e-commerce marketing strategy of small and micro-enterprises in China," *World Scientific Research Journal*, vol. 6, no. 6, pp. 134–142, 2020.
- [5] Q. Zhang and R. Liu, "Research on the reform of talent cultivation mode of higher vocational cross-border electronic commerce based on modern apprenticeship," *International Journal of Education and Economics*, vol. 3, no. 1, article 73, 2020.
- [6] Finance-Electronic Commerce, "Recent findings from Nanjing University of Aeronautics and Astronautics provides new insights into electronic commerce (entity name recognition of cross-border e-commerce commodity titles based on TWs-LSTM)," *Internet Business Newsweekly*, vol. 76, 2020.
- [7] C. Qingsheng, "Research based on B2C cross-border e-commerce model," *China Business Theory*, vol. 2021, no. 13, pp. 34–36, 2021.
- [8] Finance-Electronic Commerce, "Study results from School of Management and Economics update understanding of electronic commerce (customs classification for cross-border e-

- commerce based on text-image adaptive convolutional neural network),” *Internet Weekly News*, vol. 65, 2019.
- [9] Finance-Electronic Commerce, “Findings from South China University of Technology update understanding of electronic commerce (product + logistics bundling sale and co-delivery in cross-border e-commerce),” *Internet Weekly News*, vol. 59, 2019.
- [10] W. He and Y. Xu, “Cross-border electronic commerce development present situation and the innovation research in China,” *American Journal of Industrial and Business Management*, vol. 8, no. 8, article 1825, 2018.
- [11] L. Yanna and G. Yanfang, “The development and improvement of the online resolution mechanism for cross-border e-commerce disputes in my country,” *Journal of Yanshan University (Philosophy and Social Sciences Edition)*, vol. 23, no. 1, pp. 72–79, 2022.
- [12] X. Yan, “Education, obstetrics, science and innovation, students-oriented: an analysis of the blockchain-based training model for cross-border e-commerce talents,” *Foreign Economic and Trade*, vol. 12, pp. 145–148, 2021.
- [13] C. Yiping and Y. Shuqing, “Research on sustainable development strategy of Changzhou cross-border e-commerce industry,” *Modernization of Shopping Malls*, vol. 24, pp. 15–17, 2021.
- [14] L. Guangqiang, “The current situation and optimization strategy of cross-border e-commerce and logistics integration,” *Modernization Of Shopping Malls*, vol. 24, pp. 23–25, 2021.
- [15] X. Xuejuan and G. Qian, “Research on the high-quality development of Caofeidian cross-border e-commerce industry,” *Industrial Technology and Vocational Education*, vol. 19, no. 4, pp. 109–111, 2021.
- [16] X. Aiping and L. Zhi, “Exploration and practice of practical cross-border e-commerce talent training based on the integration of production and education,” *Journal of Hubei Radio and Television University*, vol. 41, no. 6, pp. 39–42, 2021.
- [17] G. Jie, “Exploration of the optimal path for cross-border e-commerce “Government, school, business and enterprise” collaborative education from an international perspective,” *Journal of Anhui Electronic Information Vocational and Technical College*, vol. 20, no. 6, pp. 100–103, 2021.
- [18] L. Jieting, “Innovation in e-commerce operation management based on the rise of the Internet of Things,” *Information and Computer (Theory Edition)*, vol. 33, no. 19, pp. 211–213, 2021.
- [19] M. Kaixin, “Reflections on the development of cross-border e-commerce in my country under the background of the rise of the Internet of Things,” *Investment and Entrepreneurship*, vol. 31, no. 19, pp. 47–49, 2020.
- [20] Z. Huiling, Y. Xueqing, and S. Yanfeng, “Bottlenecks, models and countermeasures of the development of cross-border e-commerce logistics under the new retail perspective,” *China Storage and Transportation*, vol. 10, pp. 87–90, 2020.
- [21] C. Jinling and P. Yang, “The development strategy of cross-border e-commerce in Henan Province under the background of intelligence,” *Innovation and Technology*, vol. 19, no. 11, pp. 17–22, 2019.
- [22] Z. Jinhui, “The application and research of Internet of things in cross-border e-commerce comprehensive service system,” *Electronic World*, vol. 18, pp. 61–62, 2019.
- [23] Z. Lingling and C. Donghua, “Research on the transformation and upgrading path and countermeasures of traditional industries based on value chain innovation—taking Ningbo City as an example,” *Modern Marketing (Latest Issue)*, vol. 6, pp. 98–101, 2019.
- [24] S. Zimo, “Cross-border e-commerce development is heading for the Blue Ocean,” *Shenzhen Special Economic Zone News*, vol. 68, 2016.
- [25] T. Yinyin, *Research on the Development of Cross-border e-Commerce in Shenzhen Qianhaiwan Free Trade Port Area*, Dalian Maritime University, China, 2015.