

Research on the Development of Wenzhou Rural E-commerce Industry Cluster under the background of Big Data

Zhijie Xia^{1,a}

¹Zhejiang Industry & Trade Vocational College, China.

^a695020857@qq.com

Abstract

E-commerce is a new industry, which plays a very important role in changing people's life pattern. However, most rural areas are still in the primary stage of development, and their strength is relatively weak. Therefore, it is necessary to construct a stable cluster system by means of industrial cluster, so as to effectively improve the competitiveness of industrial cluster. In the process of industrial cluster development, innovation should be continuously carried out, cooperation areas should be expanded, and management of technology and talents should be strengthened. Taking the development of wen zhou rural e-commerce industrial cluster as an example, this paper puts forward some reasonable Suggestions on cluster innovation, and analyzes the significance, structure and formation mode of innovation, so as to provide guidance for the coordinated development of e-commerce industrial cluster in rural areas.

Keywords

Agricultural big data; Wen zhou rural e-commerce industry cluster; Rural e-commerce.

1. Overview

In recent years, driven by various policies such as the development of modern agriculture and the expansion of rural demand, China's rural e-commerce has developed rapidly, playing an important role in promoting the transformation and upgrading of agricultural industry, promoting local economic development, solving the problems of agriculture, rural areas and farmers, and implementing targeted poverty alleviation.

Relying on e-commerce business model of the new industrial cluster emerged. For example, chang zhou Henglin board industrial cluster annual e-commerce turnover reached 1.5 billion yuan, smoothly transformed into a green home industry. However, there are significant differences in the evolution process of rural e-commerce industrial clusters with different entrepreneurial orientation. Clusters with strong innovation and advanced actions grow rapidly, while clusters with slow development or decline. Taking the development of wenzhou rural e-commerce industrial cluster as an example, this paper puts forward some reasonable Suggestions on cluster innovation, and analyzes the significance, structure and formation mode of innovation, so as to provide guidance for the coordinated development of e-commerce industrial cluster in rural areas.

2. The Development of Wen Zhou Rural E-commerce Industry Cluster

2.1. Necessity of the Development of Wen Zhou Rural E-Commerce Industrial Clusters

Wen zhou agricultural industry structure, operating system is great changes have taken place in production environment, in the field of agriculture, about 40% of agriculture, forestry and fishery brigade in wen zhou enterprises participate in the application of electricity, in taobao,

Tmall, jingdong, for example, a total of produce active online store 2284, sprung up sweet sea food in wenzhou, wenzhou billiton electrical contractor sea food and so on a number of leading enterprises.

With the vigorous development of rural e-commerce, wenzhou has increased its support to cultivate and improve e-commerce villages. According to the research Report on China's Taobao Villages from 2009 to 2019 released by Aliresearch, Wenzhou has 324 Taobao villages, ranking the second in China in total, as shown in Figure 1. Pingyuan village of Leqing City was selected as the model village of E-commerce in Zhejiang Province for its intensive cultivation of Dendrobium leaf doudou. Xiao Village of Yongjia County was selected as one of the top 10 e-commerce villages in Zhejiang Province during the 12th Five-Year Plan period by relying on the advantageous characteristic industry of teaching toys.

The development of Wen zhou e-commerce has achieved remarkable results, but there are still some problems in the overall analysis of wenzhou e-commerce market. First, the shortage of talents is quite serious. The managers in charge of agricultural markets fail to meet the requirements of e-commerce development in terms of knowledge and technology, and their low salaries also fail to attract professional talents. Second, the infrastructure is not perfect. Although the network in the rural areas of Wenzhou has been fully covered, the signal quality is poor and the speed is too slow, thus causing serious obstacles to the development of rural e-commerce. Third, the construction of logistics infrastructure is relatively backward, and there is no gathering place of logistics resources. This not only makes the logistics transport efficiency low, but also causes serious cost waste.

| province | city | Number of Taobao Villages | The national ranking |
|--------------------|--------------|---------------------------|----------------------|
| Zhejiang province | jinhua | 334 | 1 |
| Zhejiang province | wenzhou | 324 | 2 |
| Shandong province | heze | 307 | 3 |
| Zhejiang province | taizhou | 260 | 4 |
| Fujian province | quanzhou | 205 | 5 |
| Zhejiang province | ningbo | 175 | 6 |
| Jiangsu province | suqian | 174 | 7 |
| Zhejiang province | jiaxing | 171 | 8 |
| Zhejiang province | hangzhou | 167 | 9 |
| Guangdong province | dongguan | 148 | 10 |
| Jiangsu province | suzhou | 135 | 11 |
| Jiangsu province | xuzhou | 130 | 12 |
| Guangdong province | guangzhou | 124 | 13 |
| Guangdong province | jiayang | 108 | 14 |
| Guangdong province | foshan | 98 | 15 |
| Hebei province | xingtai | 98 | 15 |
| Guangdong province | shantou | 94 | 16 |
| Guangdong province | chaozhou | 92 | 17 |
| Hebei province | shijiazhuang | 74 | 18 |
| Guangdong province | zhongshan | 56 | 19 |
| Jiangsu province | wuxi | 56 | 19 |
| Zhejiang province | huzhou | 53 | 20 |

Figure 1. List of Cities with the number of Taobao Villages in 2019

So the development of electronic commerce in rural areas in wenzhou to make corresponding change, and the industry cluster is an important direction of development of industrial clusters is characterized by the large number of enterprises in a specific area, and the industry itself has certain characteristics, rural e-commerce will have these features, and in the development process of gradually formed a production supply and marketing integration, and through the cluster can make the competitive power of electronic commerce in the original on the basis of further ascension in the process, the Internet gives good support cluster development, make industry can coordinate on network platform.

2.2. Wenzhou Rural E-commerce Industry Cluster Development Status and Problem Analysis

Research on the Development of Rural E-commerce Industrial Clusters in Wenzhou This paper analyzes the development status of rural E-commerce industrial clusters in Wenzhou, combined with the framework structure model of the pentagonal growth mechanism of rural E-commerce industrial clusters proposed by Ling Shouxing, as shown in Figure 2. There are two main sources of data in this study: First, the first-hand research data, the researchers went deep into the rural areas of Wenzhou from June to August 2019, interviewed and collected data with many companies and relevant government departments and institutions, and accumulated relevant materials; Second, through the online public information of the relevant government departments, Ali Research Center, core enterprises and other organizations in the three case clusters, as well as other online public information such as statistical yearbooks, the relevant materials of cluster development are obtained.

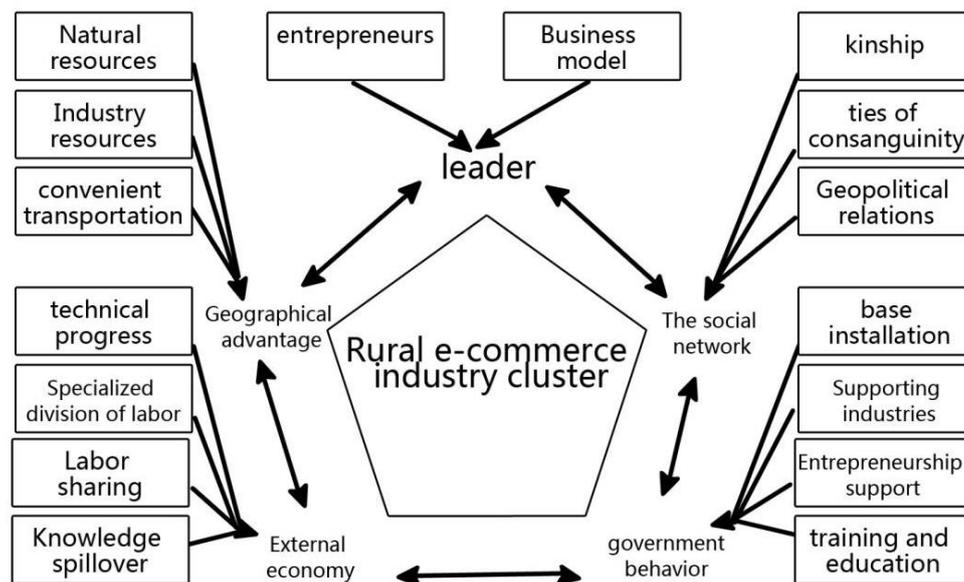


Fig 2. A pentagonal framework diagram of the formation and evolution mechanism of rural e-commerce industrial clusters

Table 1. Quantifiable index system of Wenzhou rural e-commerce industrial cluster development

A quantifiable index system for the development of rural e-commerce industrial clusters

| Level indicators | The secondary indicators | Level third indicators | Index connotation |
|-------------------------|---------------------------------|---------------------------------------|-------------------|
| The government behavior | base installation | Network bandwidth | |
| | | The WiFi coverage | |
| | | Computer penetration | |
| | | Penetration of smart mobile terminals | |
| | | Logistics transfer Center | |
| | | Delivery point distribution | |
| | | Road density | |
| | | ERP system | |
| | | Cloud applications | |
| | Management information platform | | |
| | training and education | Training institutions | |
| | | Number of participants | |
| | | Improvement of training effect | |
| The leader | Business model | Online transaction volume | |
| | | Online retail sales | |
| | | Number of Express parcels | |
| | | Number of online stores | |
| | | advertising | |
| | | Advertising ROI | |
| | | Social marketing application | |
| | entrepreneurs | Entrepreneurial spirit | |
| | | Market forecast | |
| | | Line power | |
| External economy | Working group | education background | |
| | | entire period of actual operation | |
| | | Professional structure | |
| | technical progress | Product innovation | |
| | | Innovation of production mode | |
| | | Business model innovation | |

In the process of the formation and evolution of Wenzhou rural e-commerce industrial cluster, geographical advantages, external economy, leading enterprises, social network, government behavior and other factors promote and interact with each other, and jointly promote the development of the cluster into the mature stage of the cluster. However, due to the serious homogenization of enterprises in the cluster, there are some problems in the sales of agricultural products, such as food safety is difficult to control, distribution requirements are high, farmers' management is scattered, and corporate governance is lacking, which makes it difficult for the cluster to develop sustainably and requires the government, industry associations and rural economic organizations, etc.

The use of data forecasting can adjust the operation links of production and consumption, improve the macro decision-making and management level, break through the geographical and time constraints, extend the sales time of agricultural products, expand the sales channels,

and connect the rural small-scale production with the urban demand. Accelerate the pace of agriculture towards marketization, standardization, organization and branding.

Table 2. Development status of rural e-commerce cluster in Wenzhou

| Development factor | Development of rural e-commerce cluster in Wenzhou |
|------------------------|--|
| Geographical advantage | Wenzhou is a famous "land of fish and rice" and "land of seafood and eggs" in China because of its excellent soil quality, large number of lakes, large marine area and abundant resources. Relying on traditional industries, online and offline sales models are combined to form a pattern of diversified products and services, diversified brands and diversified sales models. |
| Leading enterprise | Qing Mao Feng, Yongjia Wuniu Early Famous Tea, "Huangyuguo" Brand Wild Pseudosciaena crocea, "Chuxu" Brand Sauce Duck Tongue, "Guangjinxiang" Brand Sorghum Meat, "Nengren" Brand Nengren Tea, "Tiefengtang" Brand Dendrobium candidum Fresh Stripes, "Qianlaohan" Brand Red Sweet Potato Jujube, and "Yuming Country" Brand Three cups of fragrant tea |
| external economy | All economic entities have cooperation and division of labor, forming a complete industrial chain in the upper, middle and lower reaches of agricultural products production and processing, online sales, logistics and distribution, and supporting services. The business model of e-commerce is transparent, and enterprises and farmers grow in innovation. |
| Government behavior | Wenzhou Municipal Party Committee and Municipal Government issued "Several Policy Opinions on Cultivating New Kinetic Energy in Agriculture and Rural Areas and Implementing Rural Revitalization Strategy", which comprehensively combed the relevant policies concerning the use of funds in agriculture and reconstructed the industrial policy system in Wenzhou agricultural field. The new policy focuses on the theme of "implementing rural revitalization strategy, cultivating new kinetic energy of agriculture and rural areas, and achieving high-quality development". In the future, it will pay more attention to the transformation of agricultural industry, ecological and environmental protection work, innovation of capital delivery methods and concentration of financial resources to do great things. |
| Social network | Rural social networks based on consanguinity, consanguinity and geography continue to play an active role. However, due to numerous homogeneous enterprises or business models and fierce market competition, the stability of social networks declines. |

3. The Research on the Necessity and Current Problems of Big Data to Guide the Development of Rural E-commerce in Wenzhou

3.1. The Necessity of Rural E-Commerce Development in Wenzhou under the Background of Big Data

China's Internet industry has developed rapidly, but it is also facing a severe digital gap (Knight and Song,1999; Wang Mingfeng, 2005). The digital divide refers to the gap between the possession and application of information technology (DewanandRiggins2005), which may also aggravate the unbalanced pattern of China's existing social and economic development and lead to the further separation and fragmentation of social space. With the increase of Internet penetration rate in rural areas, the digital gap between urban and rural areas in China is narrowing. Information flows through the Internet with high efficiency and low cost, which weakens the location disadvantage of rural areas. The rural population can search for relevant information in the world by information train, and the rich resources of rural areas are also presented to the world as never before.

3.2. Research on the Development of Rural E-commerce in Wenzhou under the Background of Big Data

1) Rural e-commerce not only plays a penetrating role in the agricultural industrial chain, but also is an important source of agricultural big data. The utilization quality of big data needs to be improved. Agricultural products have short production cycle and strong liquidity, so it is difficult to effectively integrate data collection and update, and the quality of massive big data is very difficult to grasp. For the development of rural e-commerce in Wenzhou, the use of big data will directly affect the accuracy of data sources, and high-quality data can solve the rural e-commerce problem. If the data collected by rural e-commerce is not time-sensitive, the information is not updated in time and the accuracy is not high, and the decision-making mistakes will occur in the development of rural e-commerce in Wenzhou.

2) The lack of electronic commerce talents, especially data analysis talents, is the bottleneck of the development of rural electronic commerce in Wenzhou. With the development of artificial intelligence, data intelligent machines gradually replace labor, and data analysis talents are the key to the development of rural e-commerce. Rural e-commerce in Wenzhou is facing the problem of difficult data analysis and processing. Comprehensive talents who are familiar with the production habits and characteristics of agricultural products and understand the construction and development of Wenzhou rural e-commerce comprehensive platform are scarce.

3) Rural infrastructure construction in Wenzhou is insufficient and resource allocation is unreasonable. With the development of technology, economy and technology, the basic development of e-commerce in first-and second-tier cities has steadily improved, and innovative e-commerce projects and models are constantly emerging with the upgrading of people's consumption. However, the rural infrastructure is poor, and the construction of intelligent logistics system is insufficient. Because the system of urban-rural integration development has not yet been formed, there is no systematic and coordinated planning for the special logistics network for agricultural products connecting cities to rural areas, and there are few logistics nodes in rural areas, underdeveloped logistics distribution networks and high logistics distribution costs, which greatly push up the cost of agricultural products, reduce the profits of agricultural products and make agricultural products lose their competitiveness.

4) Lack of professional e-commerce data analysis platform; Some agricultural products and fresh products in Wenzhou are well-known in Zhejiang, but the degree of branding is low, which has not occupied a place in the development of national agricultural products e-commerce. Moreover, the development of industrial clusters in different regions is relatively backward. Wenzhou agricultural products industry has not maximized the use of e-commerce to achieve industrial upgrading and innovation, and the degree of data information sharing among business process participants is low, which fails to achieve better industrial clustering.

4. Wenzhou Rural E-commerce Industry Cluster Development Path Analysis

Establish the innovation system of agricultural products e-commerce in Wenzhou, which is compatible with market economy and regional development. Explore the construction of agricultural products e-commerce system suitable for the actual situation of Wenzhou, promote the development of agricultural products market in Wenzhou, and promote the harmonious development of urban and rural economy and society.

(1) Strengthen the scale and standardization of agricultural products production, processing, warehousing, transportation and sales, and make every effort to build a Pyramids structure system of agricultural products e-commerce. Because agricultural products production is difficult to achieve standardization and scale, its branding is more difficult and long than

industrial products, which is a complex and arduous project, and it has become one of the factors restricting the sustained and rapid development of agricultural products e-commerce. By encouraging and guiding the development of enterprises. By developing e-commerce industrial clusters, it is helpful to rapidly improve the level of warehousing, logistics and e-commerce services.

(2) Establish a training base for young talents in the "One Village, One Power" project

Through the combination of school and enterprise, the task of cultivating e-commerce talents is to train college students, farmers, e-commerce practitioners, returning youth, e-commerce workers and other personnel at various levels.

(3) Establish rural logistics information platform

The data show that most rural areas in China have network coverage, but the Internet construction is still imperfect. Besides China Post, other express delivery companies such as SF Express, Yunda and Yuantong have not entered the rural e-commerce distribution market, which leads to the fact that rural areas cannot query goods information like cities and towns, which greatly reduces farmers' shopping experience. To realize the connection between rural areas and cities, the construction of rural information platform is essential. GPS, supply chain management and other technologies are used to design the whole process of commodity distribution, which helps farmers to inquire the status of goods in time, provides channels for agricultural products export, and thus provides technical support for the development of rural e-commerce.

(4) Pay attention to cultivating and strengthening the main body of agricultural industry management, and leading enterprises will drive the industrial chain to extend upward and downstream, covering agricultural coarse and fine processing, and realize the integration of agricultural "three industries". Deep processing of agricultural products can effectively increase the added value of primary agricultural products in Wenzhou and improve the overall benefits of agricultural e-commerce. Agricultural products processing industry is the highest level of the extension of agricultural industrial chain, which plays an important role in the development of rural economy in Wenzhou. It promotes the development of agricultural products processing industry to improve the overall quality of agricultural e-commerce, enhance the competitiveness of agricultural e-commerce, and promote the transformation of traditional trade of agricultural products in Wenzhou.

(5) Establish a characteristic agricultural product park to promote the integration of agricultural product brands and online big data

Actively integrate Wenzhou local characteristic agricultural products parks and brands with Internet big data, rely on brand utility to enhance the brand image and popularity of online agricultural products, promote the production, processing and sales of Wenzhou agricultural products, and accelerate the formation of an e-commerce platform for characteristic agricultural products. Establish a platform of "Mobile internet plus Tourism+Agricultural Products", improve the product system of products, farmhouse music and eco-tourism, integrate farmhouse music through mobile internet, encourage tourists to drive the sales of local agricultural products, let online and offline consumers flow, attract offline people with eco-tourism, and form the first purchase of agricultural products. Then, through the sharing of consumers, new buyers and tourists are introduced to try to create a new type of O2O for agricultural tourism. Promote the integration of online and offline, and enlarge the effects of brand agglomeration and resource integration.

The continuous development of agricultural e-commerce has greatly contributed to the comprehensive and rapid development of China's social economy, and at the same time, it can effectively and scientifically solve the "three rural issues". Wenzhou rural e-commerce industrial cluster is still facing problems such as tired development and slow transformation.

Through analysis and research, the author puts forward some suggestions for Wenzhou rural e-commerce industrial cluster to get out of the current predicament: by strengthening the construction of agricultural e-commerce talents, circulation facilities and market, actively guiding the establishment of industrial bases and service platforms, and smoothing the investment and financing channels of agricultural e-commerce, creating characteristic agricultural products and opening up new models.

Acknowledgments

This paper is supported by 2018 National high-skilled personnel training Scientific research project, Grant(No.GJKY201802)

This paper is supported by Youth Foundation of Social Science and Humanity, China Ministry of Education, Grant (No. 18YJC790135); Title: Research on Construction of Rural E-Commerce Development index: Based on the Survey of 100 Typical Taobao Towns.

References

- [1] Zhang bingda. rural e-commerce development prospects and strategies under the rural revitalization strategy [J] agricultural economy, 2018 (11): 137-138.
- [2] Zhou Bin, Li Xin, Hu Haijing, Hu Yongsheng, Yuan Yumin, Bian Lingling. Discussion on the sustainable development of rural e-commerce under the background of rural revitalization strategy [J] E-Commerce, 2018 (22): 13-15.
- [3] Porter M E. Clusters and the new economics of competition [J]. Harvard Business Review, 1998: 77 - 90.
- [4] Thode S, Maskulka J. Place - based marketing strategies, brandequity and vineyard valuation[J]. Journal of Product & BrandManagement, 1998, 7(5) : 379 - 399.
- [5] Ling Shouxing. Research on the Formation and Evolution Mechanism of Rural E-commerce Industrial Cluster in China [J]. Business Research, 2015 (1): 104-109.
- [6] Shen Tiesong. Strategy of Constructing Business Ecology of Agricultural Products Supply Chain in internet plus [J]. Business Economic Research, 2014, (20):25-27.
- [7] Cai Zhixiang and Tang Fei. Rural E-commerce is in the ascendant and has great potential for development and upgrading —— Suggestions on the high-quality development of rural E-commerce in Yuhang District of Hangzhou [J]. Statistical Science and Practice, 2018, (07):37-40.
- [8] Agricultural products industry: looking at China's future road from the development of American agricultural informatization-mode is king [EB/OL]. [2015-03-02]. http://data.eastmoney.com/report/20150302/hy_appglkirmtnnindustry.html.
- [9] Liu Liwei, senior high school science. The practice and enlightenment of developing "smart agriculture" in the United States to promote the reform of agricultural industrial chain [J]. Economic Horizon, 2016, (12):120-124.
- [10] Chris Anderson. The End of Theory: The Data Deluge Makes the Scientific Method Obsolete. Wired, 2008, 16 (7).
- [11] David Lazer, Alex Pentland, Lada Adamic et al. Computational Social Science. Science, 2009, 323 (5 915): 721-723.
- [12] Liang Fuhua, Gao Yaode. Implementing agricultural big data construction and rural e-commerce development [J]. University Education, 2016, (12): 163-176.
- [13] Zhao Jing, Zhang Jie. Research on the development of rural e-commerce from the perspective of big data [J]. Business Economics Research, 2018, (7): 118-120.
- [14] Chen Jing, Qin Chengde. Innovation of community service mode in new countryside under e-commerce environment [J]. Jiangsu Agricultural Sciences, 2012,40(6):421-422.
- [15] Ali Research Institute. China Taobao Village Research Report 2015 ... EB/OL]. (2015-12-24).

- [16] Yan Huafei, Hu Bei. Research on the driving role of entrepreneurs in the growth of industrial clusters: an exploratory analysis based on in-depth interviews [J]. *Soft Science*, 2012, 26 (4): 91-95.
- [17] Sichuan Academy of Social Sciences: Current Situation and Countermeasures of Rural E-commerce Development [J]. 2015-07-17.