Research Article

Construction of Agricultural Products of e-Commerce Ecological Network System under the Background of “Internet Plus”

Xuemei Zhong1,2 and Clermont Ferrand3

1Chengdu College of Arts and Sciences, Chengdu Sichuan 610400, China
2University College Sedaya International, Kuala Lumpur, Malaysia
3The King’s School, BP1560, Bujumbura, Burundi

Correspondence should be addressed to Clermont Ferrand; clermontferrand@ksu.edu.bi

Received 27 June 2022; Revised 12 July 2022; Accepted 20 July 2022; Published 2 August 2022

1. Introduction

Since the 21st century, the computer and Internet technology have developed rapidly, and the mobile communication network has developed from 2G to 5G, providing a new platform and new development ideas for many traditional economic industries [1, 2]. “Internet plus” is a new Internet industry platform built by Internet communication technology. It deeply integrates various traditional industries with Internet-derived industries such as “big data, Internet of things, and cloud computing,” creating a new development ecosystem for traditional industries. “Internet plus” represents a new social form, further improves the centralized control and optimization function of the Internet on the allocation of social resources, deeply integrates various innovations of the Internet into the social and economic fields, further improves the productivity and innovation of traditional industries, and builds a wider range of Internet [3–5]. It is a new form of economic development based on basic platforms and tools.

Since 1970s, China’s economy has achieved rapid development under the influence of the reform and opening-up policy, which has laid a solid material condition and technical foundation for the modernization of traditional
agriculture. However, up to now, for thousands of years, the number of traditional small-scale farmers in China still accounts for more than 80% of the agricultural employees in China, and it still cannot be changed in a short time, which makes the development of modern agriculture in China quite slow [6–8]. This year, combined with the achievements of Internet technology development, people began to promote and improve the ecological environment of traditional agricultural development through e-commerce platform. The construction of e-commerce ecosnetwork system of agricultural products is conducive to opening up the sales area of agricultural products, reducing the intermediate links in the traditional agricultural product sales chain, improving the circulation efficiency of agricultural product supply chain, increasing farmers’ income, and creating new ideas for precision poverty alleviation and socialist common prosperity [9–11]. At the same time, more people need to participate in the construction of agricultural products e-commerce ecological network system, which provides more jobs for solving rural surplus labor force [12].

By studying the development history of global e-commerce, we can find that the developed countries in Europe and the United States have developed in the field of information technology for more than 40 years, including the development of e-commerce and Internet information technology; the Internet has been the level of development in electronic commerce which is relatively common, so they began to focus on the development of agricultural e-commerce. Throughout the development of global e-commerce, the development of e-commerce is closely related to the development of Information technology. As early as more than 40 years ago, developed countries in Europe and America began to study the prospect and significance of agricultural e-commerce because the development of Internet information has reached a certain level [13, 14]. At the beginning of the 21st century, they put forward the conclusion that e-commerce system of agricultural products can strengthen the dissemination of industrial information and adjust the industrial structure and balance between supply and demand [15]. They believe that with the help of agricultural products e-commerce ecological network system, agricultural income can be increased and social economy can be promoted. For the special situation that China’s Internet information technology started late and developed rapidly, in 2016, it was based on “vigorously promoting ‘internet plus’ modern agriculture, applying Internet of things, cloud computing, big data, mobile internet, etc.” of modern information technology, push geoponics transformation, and upgrading of the whole industrial chain [16–18]. The concept of “e-commerce” was born, and Chinese researchers summed up the relevant opinions on the characteristics of China’s agriculture in the significance of constructing the original e-commerce ecosystem of agricultural products. First, we should adapt to local conditions, not copy directly, and find a development model suitable for regional characteristics through regional characteristics [19, 20]. Second, increase government support, and correctly guide the effective implementation of e-commerce ecological network system construction of agricultural products through policies. Third, we should pay close attention to training professionals and provide technical support for the construction of ecological network system of agricultural products e-commerce.

2. Materials and Methods

2.1. Characteristics and Advantages of e-Commerce. Broadly speaking, e-commerce refers to the business activities conducted by people through electronic communication tools, which originated in the 1920s. With the development of digital information technology, in the 1960s, e-commerce in a narrow sense, especially through online mode, began to take shape, which is now the concept of e-commerce, which we generally recognize. Compared with the constituent elements of traditional offline transactions, the constituent elements of the new online trading industry brought by e-commerce are different. E-Commerce generally consists of transaction subject and object, online platform, transaction matters, information exchange, capital chain, distribution logistics, and after-sales. The functional characteristics of e-commerce are also different from the single function of traditional offline transactions, mainly including comprehensive information processing, collaborative processing of various components, and online comprehensive transaction services. Through the function store of e-commerce, we can analyze the advantages of e-commerce over traditional offline transactions as follows:

2.1.1. Expand Product Promotion Channels. The current e-commerce relies on the development of Internet technology and smart phones, making all kinds of traditional goods have a huge potential market. According to data statistics, as of December 2020, the scale of China’s Internet users has reached 989 million, while the scale of China’s instant messaging users reached 981 million, China’s use of mobile Internet users as high as 99.7%. Nowadays, e-commerce relies on the development of Internet technology and smart phones, so there is a huge potential market for all kinds of traditional goods. According to statistics, as of December 2020, the number of Internet users in China has reached 989 million, and the number of instant messaging users in China has reached 981 million. It is not difficult to see that the proportion of Internet users using mobile phones in China is as high as 99.7%. At the same time, the number of rural netizens in China reached 309 million, accounting for 31.3% of the total number of netizens. Since 2017, the turnover of various e-commerce platforms in the Double Eleven Shopping Festival has increased year by year. As of the Double Eleven Shopping Festival in 2021, some platform transactions have even tripled (Figure 1).

2.1.2. Shorten the Product Trading Supply Chain. The traditional supply chain model of product transaction is “producers … agents at all levels … consumers”, in which there are as many as five intermediate agents for individual products, which presents a vicious circle of producers selling goods without profit and consumers buying goods at a high price, and a large amount of cash flows into the pockets of
agents. The emergence of e-commerce has broken this traditional situation, which can realize the direct information exchange between producers and consumers, reduce consumer spending, and increase the profits of producers.

2.1.3. Break the Limit of Time and Space. The expansion of the scale of e-commerce development is inseparable from the strong support of the logistics industry. How much manpower and material resources were consumed behind the ancient story of “Riding a concubine in the world of mortals and laughing, no one knew it was a lychee.” Today’s logistics industry development does not allow this kind of situation to happen again. Moreover, you can place an order in Urumqi in the morning, and in the evening, you can eat the concubine of Guangxi laughing litchi. This also makes there no time and space barrier between producers and consumers who are relatively far away and promotes the economic development of remote areas.

2.2. Theoretical Basis of e-Commerce Development of Agricultural Products. Combining the characteristics and advantages of e-commerce, e-commerce is integrated into the whole ecological system construction of traditional agricultural products from production to sales, and a comprehensive online market is formed, which is based on the origin and logistics distribution of agricultural products and interconnected to realize centralized processing of information such as purchase and sale of agricultural products. This is agricultural product e-commerce. e-Commerce of agricultural products has the characteristics of openness, sharing, convenience, practicality, and trans-regionality of the Internet. Accelerating the transformation of traditional agriculture into a new e-commerce ecosystem of agricultural products is conducive to realizing more efficient and faster information exchange and purchase and sale of agricultural products. At present, the basic forms of e-commerce ecosystem of agricultural products include wholesale of agricultural products from enterprise to enterprise, retail of agricultural products from enterprise to consumer, and several online purchases by the government. The construction of e-commerce ecosystem of agricultural products has promoted the competitive advantage of traditional agriculture in the market, has promoted the progress of rural economy, and has obvious social significance for eliminating the difference of results and realizing common prosperity.

2.3. China’s Agricultural Products e-Commerce Development Status. As one of the oldest birthplaces of farming civilization in China, the agricultural production economy occupies a very heavy proportion in the national economy. At present, China is at a critical moment to realize the great rejuvenation of the Chinese nation. Doing a good job in the transformation of traditional agriculture is conducive to the steady growth of China’s economy. Under this background, e-commerce of agricultural products has been strongly supported by the government. From 2008 to 21 years, the government issued many targeted opinions and notices, which played a guiding role in the development of e-commerce of agricultural products. With the realization of the concept of internet plus, China’s e-commerce of agricultural products has achieved fruitful results in recent years, and each province and city are building their own characteristic e-commerce model of agricultural products. In recent years, with the continuous improvement of people’s requirements for food safety and quality, the demand for green and high-quality specialty agricultural products in the market is also constantly increasing, and the second-generation market potential of specialty agricultural products in various places is very huge.

At present, there are still some problems in the development of e-commerce of agricultural products in China:

(1) Backward infrastructure mainly means that the infrastructure construction process of Internet communication and the logistics network construction process are relatively slow in the western region of
China. Some towns and villages in extreme geographical locations are not connected to the Internet, and mail can only be delivered through the postman climbing mountains and wading.

2. e-Commerce talents of agricultural products are scarce. As a hot industry in recent years, e-commerce has been taught in related majors in universities. However, because the rural employment environment is too attractive, few students are willing to go to the grassroots level.

3. Traditional thinking concepts cannot be changed. At present, the main productive forces in rural areas of China are mainly middle-aged and elderly people. Their education level is not high, and it is difficult for them to accept innovations in their accustomed lifestyle and production.

If we want to build a good e-commerce ecosystem of agricultural products, we need to constantly put forward solutions to these problems. For example, I have heard that the macrocontrol policies encourage college students to start businesses in rural areas and speed up the process of information infrastructure construction and logistics network construction.

3. Results

3.1. e-Commerce Ecosystem of Agricultural Products. The electronic ecosystem of agricultural products is a complex system involving the whole process of production, supply, and consumption of agricultural products. Around the production and sale of agricultural products, producers, consumers, financial institutions, breeding R&D institutions, and other subjects carry out information exchange, cooperative competition, and other behaviors, which essentially constitutes a complementary cooperative existence relationship and forms a brand-new business ecosystem in the process of continuous integration and innovation.

The construction of e-commerce system of agricultural products should be guided by the national policy, especially in the era of “mass entrepreneurship and innovation.” Based on the rational “internet plus” model, modern rural agricultural cooperatives with informatization, security, and branding should be set up, and the producers and consumers should be directly linked in the form of cooperatives to promote their information exchange, scale, and industrialization. The establishment of cooperatives can promote and plan all aspects of scientific production of agricultural products and control food safety from the source. The establishment of cooperatives can optimize the scientific production of agricultural products, promote the development process of scientific production of agricultural products, and control food safety from the source. At the same time, cooperatives are responsible for the technical service of products, breeding of high-quality seedlings, product sales, etc. Farmers only need to be responsible for planting and production when joining cooperatives, so that technical risks and market risks can be effectively controlled and farmers can be protected to the greatest extent, to ensure farmers’ economic benefits to the greatest extent. Establish a cold chain logistics system and a product traceability system with cooperatives as a unit, increase the transparency of food production links, and establish a natural disaster insurance system to prevent natural disasters from causing excessive impact on farmers (Figure 2).

Farmers are the main body of rural areas and agriculture and the source of e-commerce network system of agricultural products. Cultivating a group of farmers who know technology and can produce is very important to promote agricultural modernization. As early as 2012, China clearly pointed out in the No.1 Document of the Central Committee that “vigorously cultivate new professional farmers”, and then the Fifth Plenary Session of the 18th CPC Central Committee regarded new professional farmers as the future development direction of rural areas. There are certain knowledge and skills requirements for farmers in the production and processing system of modern agricultural system, which requires the government or enterprises to establish a perfect training system, build farmer education disciplines and courses and carry out targeted theoretical and practical teaching assessment on the basis of objective evaluation of farmers’ knowledge and skills level, so as to promote the development of knowledge-skilled farmers (Figure 3).

3.2. Acceleration of the Standardization of Agricultural Products. The important characteristics of e-commerce of agricultural products lie in the branding of agricultural products and the standardization of agricultural product information, so that agricultural products with product strength and popularity can be established. China has a vast territory and abundant natural resources, and there are well-known agricultural products everywhere, such as northeast rice, Xinjiang jujube/walnut, Korla pear, Qinzhou yellow millet, and Hanyuan pepper. However, agricultural production forms are mostly in the form of household production and wholesaler procurement, although they have a large production scale and are well known for their product characteristics, but they lack strong commodity brands, so it is difficult to participate in the competition of characteristic agricultural products. In view of this, the government or industry should actively organize and guide, effectively integrate the production of small-scale farmers through cooperatives, and urge them to produce and process according to

![Figure 2: Framework of rural agricultural cooperatives.](image)
Construction system of new knowledge and skill oriented farmers

Figure 3: Construction system of new knowledge and skill farmers.

(a) Northeast rice
(b) Korla pear
(c) Qinzhou yellow millet

Figure 4: Composition of rich agricultural products in China.

Safeguard measures

1. Accelerating rural informatization infrastructure construction
2. Accelerate the construction of rural logistics system
3. Introducing and cultivating professional talents
4. Cultivate a number of rural leaders and demonstration agricultural products

Figure 5: Safeguard measures for ecological development of e-commerce of agricultural products.
relevant national standards and design packaging and quality standards with regional characteristics, so as to effectively construct products with regional characteristics (Figure 4).

The commodity attribute of agricultural products lies in the unification of their product standards. However, agricultural products are different from general industrial or handmade products, and it is difficult to directly regulate a certain standard. However, if a unified standard is not established, the market of agricultural products will always be in an unconstrained state, and it will be difficult for consumers to judge whether products are good or bad. It is inevitable that black-hearted merchants will fill the gap, and ultimately the brand power of such products will be damaged. Therefore, the local government should jointly formulate relevant standards with industry associations, scientific research institutions, universities, etc. and reasonably formulate product sale strategies according to the standards, so as to ensure the regularization of characteristic products and promote the sustainable development of industries and products. The construction of general standard system of agricultural products is the only way to commercialize agricultural products, and it is also the only way to build brands.

3.3. Safeguard Measures for Ecological Evolution of e-Commerce of Agricultural Products. At present, the development of e-commerce of agricultural products in most rural areas in China is at the initial stage, which has great market potential but also has great shortcomings. In order to continuously improve the ecological environment of rural e-commerce and promote the development of e-commerce of agricultural products, efforts should be made to improve the environment from the following aspects. First, accelerate the implementation of rural information infrastructure construction, especially the coverage and speed of broadband and wireless network. At present, “cable TV access to every village” has been an outdated policy slogan. As long as the Internet information base station is set up in the local area, agricultural information level can be directly improved. On the other hand, it is necessary to speed up the construction of rural logistics system. Unlike other industrial products, agricultural products have strong regionality, seasonality, and timeliness. Without modern rural logistics and transportation, it is difficult for agricultural products to be transported in time, and it is difficult to effectively realize electronization.

Developing e-commerce of agricultural products requires not only distinctive agricultural products but also professional and technical personnel who know how to operate Internet products. At present, rural e-commerce development talents are in short supply. It is necessary to increase the intensity of talent introduction, introduce professionals with professional network operations and pay close attention to cultivating professional agricultural product operators, paying special attention to absorbing and encouraging local college students to return to their hometowns to start businesses. In the process of e-commerce development of agricultural products, we should pay attention to training and cultivating a number of rural leaders and demonstration agricultural products and encourage more young people to join the trend of e-commerce of agricultural products with advanced deeds by vigorously commending and giving key support to outstanding individuals and organizations (Figure 5).

4. Conclusion

This paper takes the “internet plus” economic development model as the social background and takes the construction of e-commerce ecological network system of agricultural products as the research object, and today, with the highly developed Internet technology, it is a new trend of contemporary economy to use “internet plus” thought to empower traditional industries, drive, and promote the development of traditional industries. This paper focuses on the positive influence of the Internet on the economic form, expounds the advantages and characteristics of the development of e-commerce, and expounds the theoretical basis and present situation of the development of e-commerce of agricultural products in China. This paper puts forward the conception of e-commerce structure of agricultural products in China and focuses on the standardization and systematization of agricultural products. Finally, it puts forward some suggestions on the guarantee of electronic ecological development of agricultural products in China.

China is a big agricultural country, and the development of rural economy is an important part of China’s economy. The CPC Central Committee has repeatedly put forward the idea of “holding the rice bowl firmly in one’s own hands.” Internet-based e-commerce of agricultural products can effectively break the shackles of existing agricultural products’ information asymmetry, can accelerate the brand building of characteristic agricultural products and the development of rural economy, and is an effective way to improve the present situation of rural economy. At the same time, improving the rural economy and farmers’ living standards will play a very positive role in promoting in-depth poverty alleviation and common prosperity. The construction of e-commerce ecological network system of agricultural products studied in this paper is just a theoretical attempt to help rural economic development. In the next step, we will further study the operation mode and sustainable development of e-commerce ecological of agricultural products and help the system to be changed into and produce actual economic benefits.

Data Availability

The figures used to support the findings of this study are included in the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

The authors would like to show sincere thanks for those techniques which have contributed to this research.
References

[1] J. C. Westoby, "Forest industries for socio-economic development," *The Commonwealth Forestry Review*, vol. 58, no. 2 (176, pp. 107–116, 1979.

[2] K. Oakley, "Not so cool Britannia," *International Journal of Cultural Studies*, vol. 7, no. 1, pp. 67–77, 2004.

[3] M. N. Potenza, S. Higuchi, and M. Brand, "Call for research into a wider range of behavioural addictions," *Nature*, vol. 555, no. 7694, pp. 30-31, 2018.

[4] J. Han and D. Han, "A framework for analyzing customer value of internet business," *Journal of Information Technology Theory and Application (JITTA)*, vol. 3, no. 5, p. 4, 2001.

[5] M. S. Blumenthal and D. D. Clark, "Rethinking the design of the Internet," *ACM Transactions on Internet Technology (TOIT)*, vol. 1, no. 1, pp. 70–109, 2001.

[6] R. Mittler and E. Blumwald, "Genetic engineering for modern agriculture: challenges and perspectives," *Annual Review of Plant Biology*, vol. 61, no. 1, pp. 443–462, 2010.

[7] B. Horwith, "A role for intercropping in modern agriculture," *BioScience*, vol. 35, no. 5, pp. 286–291, 1985.

[8] H. H. Wang, Y. Wang, and M. S. Delgado, "The transition to modern agriculture: contract farming in developing economies," *American Journal of Agricultural Economics*, vol. 96, no. 5, pp. 1257–1271, 2014.

[9] N. V. Loayza and C. Raddatz, "The composition of growth matters for poverty alleviation," *Journal of Development Economics*, vol. 93, no. 1, pp. 137–151, 2010.

[10] I. Hussain and M. A. Hanjra, "Irrigation and poverty alleviation: review of the empirical evidence," *Irrigation and Drainage*, vol. 53, no. 1, pp. 1–15, 2004.

[11] T. Besley and R. Kanbur, "Food subsidies and poverty alleviation," *The Economic Journal*, vol. 98, no. 392, pp. 701–719, 1988.

[12] Y. L. Cheng, Q. Y. He, Q. I. A. N. Ping, and L. I. Ze, "Construction of the ontology-based agricultural knowledge management system," *Journal of Integrative Agriculture*, vol. 11, no. 5, pp. 700–709, 2012.

[13] A. J. Flanagin and M. J. Metzger, "Perceptions of Internet information credibility," *Journalism & Mass Communication Quarterly*, vol. 77, no. 3, pp. 515–540, 2000.

[14] W. Buente and A. Robbin, "Trends in Internet information behavior, 2000–2004," *Journal of the American Society for Information Science and Technology*, vol. 59, no. 11, pp. 1743–1760, 2008.

[15] S. Worachet, J. Lee, and A. Adewole, "Effects of supply and demand on ratings of object value," *Journal of Personality and Social Psychology*, vol. 32, no. 5, pp. 906–914, 1975.

[16] T. Dewett and G. R. Jones, "The role of information technology in the organization: a review, model, and assessment," *Journal of Management*, vol. 27, no. 3, pp. 313–346, 2001.

[17] D. W. Bates and A. A. Gawande, "Improving safety with information technology," *New England Journal of Medicine*, vol. 348, no. 25, pp. 2526–2534, 2003.

[18] H. Cheng, J. Wei, and Z. Cheng, "Study on sedimentary facies and reservoir characteristics of Paleogene sandstone in Yingmaili Block, Tarim Basin," *Geoﬂuids*, vol. 2022, Article ID 1445395, 14 pages, 2022.

[19] J. Wei, H. Cheng, B. Fan, Z. Tan, L. Tao, and L. Ma, "Research and practice of “one opening-one closing” productivity testing technology for deep water high permeability gas wells in South China Sea," *Fresenius Environmental Bulletin*, vol. 29, no. 10, pp. 9438–9445, 2020.

[20] P. Powell, "Information technology evaluation: is it different?,” *Journal of the Operational Research Society*, vol. 43, no. 1, pp. 29–42, 1992.