

APPLICATION AND EFFECTIVENESS ASSESSMENT OF QUALITY CERTIFICATION AND STANDARDISATION IN AGRICULTURAL PRODUCT E-COMMERCE

YuanBo Jia^{1,2*}, Rui Yan³, Khorloo Yundendorj⁴

¹Graduate School, University of Finance and Economics, Ulaanbaatar 13381, Mongolia.

²School of Computer Information Management, Inner Mongolia University of Finance and Economics, Hohhot010070, China.

³Department of Finance, The Second Affiliated Hospital of Inner Mongolia Medical University, Hohhot010030, China.

⁴Department of Interdisciplinary Studies, University of Finance and Economics, Ulaanbaatar 13381, Mongolia.

Corresponding Author: YuanBo Jia, Email: ncdjyb@163.com

Abstract: As a key strategy to promote China's agroecological progress, rural revitalization and farmers' income growth, agricultural product e-commerce is facing unprecedented market potential thanks to the extensive penetration of Internet technology and the rapid rise of new transaction modes. However, there are still some bottlenecks in this field in China, such as the lack of a product quality monitoring system, inconsistency in logistics and distribution services, and lagging regulations and supervision, which undoubtedly pose challenges to the high-quality development of agricultural e-commerce. Therefore, the establishment of a perfect quality certification and standardization system for agricultural e-commerce is a key initiative to break the status quo and guide the sustainable and sound development of e-commerce agriculture. Based on this, this paper first clarifies the connotation of quality certification and standardization of agricultural e-commerce, then analyses the application model of quality certification and standardization of agricultural e-commerce from several aspects, including practitioners, logistics and distribution, sales channels and policies and regulations, and finally introduces specific implementation methods.

Keywords: Quality certification; Standardisation; Agricultural e-commerce

1 INTRODUCTION

Driven by a series of national policies and measures to actively support the rural economy, agricultural e-commerce has shown a strong momentum of development, played a key role in the rural revitalization project, effectively promoted the trade circulation of agricultural products, increased the economic income of farmers' groups, and played a driving role in the process of poverty alleviation in impoverished areas. However, the development of agricultural e-commerce has not been smooth, accompanied by significant challenges of imperfect normative and standardization systems. Problems such as mixed quality of agricultural products, low brand recognition, and redundant construction of sales channels are increasingly highlighted, which is a significant gap with the long-term goal of agricultural e-commerce set by the government. Therefore, there is an urgent need to accelerate the process of upgrading the quality certification and standardization of agricultural e-commerce to achieve sustainable and high-quality development.

2 CONNOTATION OF QUALITY CERTIFICATION AND STANDARDIZATION OF AGRICULTURAL PRODUCTS E-COMMERCE

The agricultural products e-commerce quality certification mechanism is a rigorous procedure implemented within the framework of electronic business transactions, which mainly focuses on the characteristics of agricultural products, such as quality, safety, origin, and production process, etc., and carries out detailed assessment and confirmation through specific standards and methods. Its core objective is to strengthen consumer confidence in agricultural products and promote the sustainable development of e-commerce platforms. This process involves the following key links: first, the environmental quality certification, which mainly emphasizes the ecological context in which the agricultural products are grown and ensures that they are grown in an environment free of pollution and potentially hazardous factors, to safeguard the purity and health of the agricultural food products [1]. The second is the quality certification of the production process, which mainly focuses on the compliance of the production technology of agricultural products to ensure that the entire production process is carried out in a monitorable standardized process, thus enhancing the stability of the quality of agricultural products. The last is the setting and verification of quality certification scales, such as organic certification, green labeling, or geographical indications, which aim to ensure that agricultural products meet preset high quality or specific standards.

The standardization process of agricultural e-commerce is essentially an orderly integration of the entire chain of online transactions, to enhance the standardization level of the entire industry, thereby optimizing product quality, enhancing the competitiveness of agricultural products in the marketplace, and promoting the sustainable evolution of the e-commerce model. This concept covers several core areas: firstly, standardization in the production chain emphasizes following nationally and industry-recognized best practices for fine-tuned management of agricultural operations, such

as efficient use of land, scientific planting strategies, precise fertilization and irrigation, effective pest prevention and control, and standardized harvesting and packaging processes. Such standardization not only improves the efficiency of agricultural production and reduces the waste of resources, but also contributes to environmental protection and ensures the high quality and safety of agricultural products [2]. Second, product standardization focuses on the unity and consistency of products, covering clear product specifications, quality requirements, and standardized packaging design. For example, specific produce sizes, sweetness indicators, and strict pesticide residue control standards are set to meet the diversified needs and trust of consumers. Finally, standardization in the distribution chain involves standardization of logistics, warehousing, and marketing processes. For example, by implementing a comprehensive agricultural product tracking system, consumers can clearly understand the complete path of the product from field to table, increasing transparency. At the same time, strict control of transportation and storage environments effectively prevents products from being damaged or having quality problems in circulation, ensuring the rights and interests of consumers. Overall, the standardization of agricultural product e-commerce is an all-round, multi-level process aimed at creating an efficient, safe, and reliable trading environment for agricultural products.

3 THE APPLICATION MODEL OF QUALITY CERTIFICATION AND STANDARDIZATION IN AGRICULTURAL E-COMMERCE

3.1 Standardization of Practitioners

At present, the reserve of talent in the field of agricultural e-commerce in rural areas of China has not reached saturation level, and agricultural e-commerce has not yet got rid of the concept of "opening a store" at the beginning of the development process, and there is a serious lack of composite talents who can comprehensively manage the business process as well as experts with professional skills. The standardization process of the industry calls for the emergence of high-quality talent. Based on this, the application of quality certification and standardization of agricultural e-commerce needs to focus on the standardization of practitioners. On the one hand, the government should actively guide the flow of talent to the agricultural industry and rural areas, and motivate the industry's best talents to join the field of agricultural e-commerce through reasonable and reliable policy means, such as employment subsidies and preferential policies. This requires close collaboration between government departments at all levels and various units, and at the same time, based on the means of publicity and promotion to gradually change the concept of social cognition for the flow of talent [3]. On the other hand, in agricultural e-commerce transactions the information distortion problem occurs frequently, the consumer's trust is often due to the false or misleading description of the goods damaged, resulting in a gradual decline in subsequent purchase intentions. In addition, it is also necessary to carry out quality certification and standardized management of professionalism for practitioners, who need to operate pragmatically, rigorously manage marketing means, eliminate false and exaggerated publicity, and commit to improving consumer satisfaction, to form a positive cycle in the field of agricultural e-commerce, and set up a high-quality brand image and industry integrity culture.

3.2 Standardization of Logistics and Distribution

From the perspective of supply chain management, a mature logistics system for agricultural products can significantly reduce the cost and loss of the circulation link and enhance the market competitiveness of agricultural products. At present, agricultural product trading mainly relies on the traditional B2B2C model, which leads to scattered orders and is difficult to integrate, reducing the operational efficiency of agricultural enterprises and transportation efficiency. Using the intensive advantages of e-commerce, with the help of big data analysis, a large number of orders can be consolidated and processed, batch delivery, to avoid individual agricultural products in the mixed transport suffering contamination or deterioration, thus saving transportation costs. For the characteristics of agricultural products such as perishable and storage difficulties, logistics companies should give priority to freshness and anti-pollution, the use of targeted transportation strategies, such as special transport vehicles, shorten the transportation cycle of agricultural products from the origin to the market to ensure the quality of goods. In addition, the establishment of a perfect tracking system for agricultural products is a key link to ensure the quality of agricultural products and food safety. The tracking system can effectively eliminate the information barriers between consumers, distributors, and producers, and provide powerful evidence for resolving subsequent disputes. In the e-commerce environment, especially for special agricultural products such as beef, fruits and vegetables, and aquatic products, the application of tracking technology is more convenient. China has already implemented the construction of traceability systems in many places and set up several traceability production bases. To comprehensively improve the efficiency and quality of logistics and distribution, it is necessary to implement quality certification and standardized operations in the sales model, product quality tracking, transport processes, and distribution services, which not only reduces costs but also enhances the profitability of producers and suppliers.

3.3 Standardization of Marketing Channels

Traditional marketing strategies for agricultural products are relatively outdated, generally relying on large-scale wholesaling, bazaar retailing, or word-of-mouth building confined to a single channel to boost sales. In recent years, the 2020 epidemic has accelerated the development of changes in agricultural sales channels, with online shopping

platforms and virtual market browsing becoming increasingly popular. With the influence of online media and the boom of live sales, agricultural e-commerce has gained huge attention, promoting the construction of its quality certification and standardization system [4]. Under the background of the national strategy of "three products and one standard", those poor areas where the sales of agricultural products are the main economic driver, should take the initiative to adopt this strategy, utilize the "three products and one standard" system to promote the local agricultural products, shape a unique e-commerce brand, and establish a sound quality certification and standardization system for agricultural products. The company should also establish a sound quality and safety monitoring system for agricultural products and a standardized marketing and sales management system.

3.4 Standardization of Policies and Regulations

The construction of a perfect quality certification and standardization system for the e-commerce of agricultural products is inseparable from the effective implementation of policies and regulations and the strengthening of the supervision mechanism. The role of regulations at the macro level is to drive the orderly development of the entire agricultural e-commerce industry chain through precise formulation and jointly promote economic prosperity. Government departments need to deepen the improvement of relevant laws in key areas such as quality assurance of agricultural products, network security maintenance, and IT compliance. Based on the Law on the Protection of Consumer Rights and Interests and the Contract Law, the protection of consumer rights and interests should be strengthened, and their right to obtain traceability information when purchasing agricultural products online should be expanded to ensure fair trade. At the same time, based on the Law on Quality and Safety of Agricultural Products, corresponding regulations have been formulated to promote China's agricultural product quality standards to be in line with international standards. In response to problems in the deep processing of agricultural products in rural areas, such as outdated technology, illegal additives, and jerry-building, policies, and regulations should establish strict quality and safety thresholds to prevent these problems from affecting product quality and consumer health. In warehousing and transportation, there is an urgent need to clarify standardized operating procedures to prevent food spoilage due to mismanagement and ensure food safety. In the special environment of e-commerce of agricultural products, quality, and safety standards should focus on minimizing the loss of commodities in the distribution process and how to adapt to the diversified business conditions of farmers. Therefore, more comprehensive and practical standards need to be developed to adapt to this complex and changing trading environment.

4 THE IMPLEMENTATION METHOD OF QUALITY CERTIFICATION AND STANDARDIZATION OF AGRICULTURAL E-COMMERCE

4.1 The Practical Combination of Agricultural E-Commerce and Quality Certification and Standardization

The process of rural revitalization calls for a strategy that goes beyond a single system of agricultural products and e-commerce, and requires the close integration of the two to build a perfect and efficient framework for the standardization of agricultural e-commerce to activate the entire industrial chain and promote rural revitalization.

First of all, on the technical level, there is an urgent need to strengthen the construction of informationization in rural areas. In the process of building rural network facilities and Internet coverage, we can draw on the experience of advanced regions at home and abroad, such as Japan, the United States, and other developed countries that designed "highly informative rural programs" and "online agricultural technology service network" and other initiatives for the development of China's agricultural e-commerce. Provides a certain reference for the development of China's agricultural e-commerce. Drawing on the excellent elements, we can establish an advanced information service system for agricultural products, deliver market information in real-time, ensure that the information released is true and accurate, solve the problem of information asymmetry, and encourage technological innovation and the introduction of talents through financial support [5].

Secondly, from the overall consideration of the industrial chain, it is crucial to build a professional and trustworthy agricultural e-commerce website, which can play a significant role in helping the construction of quality certification and standardization of different links in the practical application, and make up for the gap in the quality certification and standardization of agricultural e-commerce. Developed countries have a rich variety of models, including the O2O model combining brick-and-mortar stores and online, B2B professional online trading, and various types of online markets and community agricultural stores. Although the number of domestic e-commerce platforms has grown, quality certification and standardized regulation still need to be improved. Due to the seasonal and geographical characteristics of agricultural products, as well as China's vast territory and uneven development, it is extremely challenging to realize the closed loop of an efficient supply chain. Therefore, it is urgent to build a high-quality, comprehensive, and professional e-commerce platform, and at the same time, strengthen the cooperation between e-commerce platforms and producers to ensure the quality of products and smooth sales channels.

Finally, from the perspective of industry practitioners, improving the skills and training quality of all industry participants is the key to promoting the standardization and sustainable development of agricultural e-commerce. At present, the shortage of talent in the fields of information technology, logistics management, and marketing in China has seriously constrained the development of e-commerce standardization. Therefore, increasing the training of talents and balancing supply and demand is a key path to achieving this goal.

4.2 Evaluation and Improvement of Quality Certification and Standardization of Agricultural Products E-Commerce

After the standards are established and put into practice, it is crucial to ensure their effective implementation and grounding, and to this end, a series of comprehensive strategies need to be adopted to promote the standardization process of the agricultural e-commerce industry and related subjects, to promote the sound and sustainable growth of the industry.

The first task is to sort out and widely disseminate the standards in an orderly manner. First of all, the newly introduced standards should be sorted out in depth to form a clear and easy-to-understand operation manual containing detailed explanations of the standards, practical case analyses, and answers to frequently asked questions, so that all kinds of participants can quickly grasp the core content and key points of implementation. At the same time, through online and offline educational activities, such as training courses, seminars, and lectures, the concept of standardization is vigorously popularized to enhance the awareness and acceptance of standards within and outside the industry. The government, industry associations, and e-commerce platforms should work together to promote knowledge popularization and ensure that all participants fully understand and voluntarily comply with the standards.

Second, strengthen the implementation and supervision mechanism. The core of the implementation phase is to put the standards into practice. E-commerce companies need to integrate the standards into their daily operations, control product quality at the source, optimize supply chain management, and improve service quality. Government departments and industry associations need to set up a strict monitoring system to regularly assess the implementation of enterprise standards, correct and punish violations, and build an effective incentive and constraint mechanism [6]. At the same time, third-party certification organizations are encouraged to intervene and certify the quality of agricultural products to protect consumer trust.

Third, continuous improvement and correction. The vitality of the standard stems from its flexibility. During the implementation process, all parties should actively feedback on problems and challenges, especially the factors affecting the implementation of standards. The government, industry associations, and standard-setting bodies should set up smooth feedback channels, according to the feedback timely adjustment and update standards to ensure that it always keeps pace with industry development, to maintain the quality certification and standardization system of advanced and practical.

Fourth, drive innovation and standards integration. The development of agricultural e-commerce cannot be separated from the promotion of technological innovation. At the same time, the implementation of standards encourages enterprises to increase investment in research and development and promote the close integration of technological innovation and standards. Through the development and promotion of new technology standards, enterprises are guided to adopt efficient production methods and management methods to enhance the value and market competitiveness of agricultural products, while strengthening the convergence with international standards to enhance the internationalization of the industry.

Finally, strengthen the collaborative quality certification and standardization of the industrial chain. Agricultural product e-commerce involves many links and multiple participants, so when implementing standards, attention should be paid to the synergistic effect of the industrial chain. Through the establishment of information sharing, cooperation, and benefit distribution mechanisms, it promotes close collaboration and resource complementarity in each link, thus enhancing the standardization level and operational efficiency of the whole industry chain.

Therefore, the quality certification and standardization implementation phase of agricultural e-commerce involves a complicated and closely interrelated process system, which requires the active participation and coordination of multiple actors such as government departments, industry organizations, merchants, and customers [7]. By integrating and promoting the knowledge of standards, strengthening the implementation and supervision, constructing a feedback and revision system, promoting technological innovation and standardization, as well as promoting industrial chain collaboration and standardization structure, the effective implementation of the specifications can be ensured, thus promoting the healthy development of the e-commerce industry of agricultural products.

5 CONCLUSION

With the acceleration of globalization and the trend of consumption upgrading, consumers' pursuit of quality of life has prompted a continuous rise in the market demand for agricultural products, and the requirements for product quality are also rising simultaneously. This trend provides unprecedented opportunities for the rise of agricultural e-commerce in China. However, China's development in this field is still in its infancy and still faces a series of challenges and risks. The construction of a perfect information standard system for agricultural products and the effective use of network technology is crucial for promoting the transformation and upgrading of China's agricultural industry. It can be said that strengthening the standardization process of agricultural production, cultivating specialized agricultural information management talents, and strengthening the quality certification and standardization of agricultural products in the context of e-commerce are the key paths to driving the prosperity of the agricultural and rural economy and moving towards agricultural modernization.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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