Research on the current situation and Development Countermeasures of Wenzhou digital agriculture

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Abstract. Research on the current situation and Development Countermeasures of digital agriculture in Wenzhou the development level of county digital agriculture in Zhejiang province leads the whole country. As one of the important cities in Zhejiang Province, the development level of digital agriculture in Wenzhou does not match its status. This paper analyzes the current situation of digital agriculture in Wenzhou, and thinks that the digital agriculture in Wenzhou is relatively weak and unbalanced. It is necessary to further consolidate the foundation of digital transformation in Wenzhou agriculture and rural areas, comprehensively improve the digital level of Wenzhou agriculture industry chain, actively explore the new mode of Wenzhou digital agriculture integration, and build a digital skills popularization system for rural areas.

1. Digital development environment of agriculture and countryside in Wenzhou

1.1. The policy environment of agricultural and rural digital development in Wenzhou
During the 13th Five Year Plan period, Wenzhou City attaches great importance to agricultural and rural construction. In 2015, the office of the Municipal People's government issued the implementation opinions on accelerating the development of agricultural e-commerce industry, which proposed to take the information strategy as the guide to fully promote the economic development of agricultural e-commerce. In 2018, the No.1 document of the municipal Party committee, opinions on comprehensively implementing the Rural Revitalization Strategy and promoting the agricultural and rural modernization at a high level (2018-2022), proposed to vigorously promote the quality, efficiency and power changes of the development of "agriculture, rural areas and farmers". In 2020, the No.1 document of the municipal Party committee of the people's Republic of China "opinions on the implementation of key work in the field of" agriculture, rural areas and farmers "to ensure the realization of a well-off society in an all-round way on schedule" proposed to strengthen the role of science and technology support, implement a number of major projects of agricultural science and technology innovation, accelerate the innovation of agricultural machinery and equipment, strengthen the construction of grass-roots agricultural comprehensive service system and capacity, and establish and improve the incentive mechanism for agricultural science and.
1.2. Digital environment support for rural development in Wenzhou

With the support of Wenzhou Government and the continuous improvement of people's living standards, the basic support capacity of agricultural and rural digital in Wenzhou has been greatly enhanced. With one by one communication base station, wireless network intervention equipment and optical fiber network "settled" in the city's rural areas, Wenzhou's rural information technology hardware facilities continue to improve. At the same time, the soft foundation of rural network information is becoming increasingly solid. In 2020, the coverage rate of administrative villages of the city's information village entry project has reached 100%, and 61 demonstrative agricultural information societies have been built.

2 Wenzhou Agricultural and rural Bureau cooperated with Wenzhou Vocational College of science and Technology (Wenzhou Academy of Agricultural Sciences) to establish Wenzhou smart Agricultural Research Institute, which was officially put into operation in January 2018 to provide scientific research support and social service bridge for the development of agricultural and rural digitalization in Wenzhou.

2. Case analysis of agricultural and rural digitization in Wenzhou City

Through in-depth interviews and on-the-spot inspection and other ways, we carried out field research on various counties (cities and districts), and the research objects focused on the local agricultural business entities in Wenzhou. This paper selected several typical cases for in-depth analysis, in order to grasp the grass-roots situation of agricultural and rural digital development in Wenzhou.

2.1. Case study of large agricultural enterprises: digital information promotes quality upgrading to the whole country

In August 2020, Wenzhou Vanke Agricultural Development Co., Ltd. obtained the vegetable purchase list from China Polar Research Center. This agricultural business entity, established in 2013, has been recognized by the market in the post epidemic era by virtue of its excellent product quality and information quality traceability system. However, in terms of e-commerce, Vanke agriculture is mainly ready to develop as a supplier.

Vanke agriculture can go out of Wenzhou thanks to its reliable quality of agricultural products. With the help of information technology, the company has realized the whole process quality traceability of vegetables "from the field to the dining table", which has improved consumers' recognition of its quality. Vanke agriculture has built a 1225 square meter clean vegetable processing and distribution center. In addition to the manual selection of vegetables, the whole set of procedures such as cutting, washing and packaging have all realized automatic production. The company has also established a monitoring system and a special testing room. There is a traceability QR code on the outer package of every clean vegetable sold. With a mobile phone scan, you can know the vegetable production base, agricultural operation, processing records, pesticide residue detection and other information, so as to achieve the whole process monitoring information of the key links of vegetable production.

In the planning of Lei Dafeng, the head of Vanke agriculture, Vanke agriculture will continue to adhere to the concept of "sharing a healthy future", and devote itself to the transformation of local agriculture from "physical agriculture" to "intelligent agriculture", "happy agriculture" and "urban agriculture". Guided by sales and brand, Vanke agriculture is committed to enhancing the added value of agricultural products. Through the creation and promotion of brand, Vanke agriculture will make full use of its expertise The power of e-commerce service enterprises to broaden the product online sales channels.

2.2. Case study of industry supporting agriculture: vigorously developing digital agricultural equipment to boost the development of agricultural enterprises

With the help of the greenhouse intelligent remote control system independently developed by Sandra Automation Technology Co., Ltd., Sandra flower and tree seedling company has greatly saved the labor cost. At present, the company only needs two full-time employees to take charge of the daily work, and the rest of the temporary agricultural work such as weeding is completed by the surrounding farmers' Part-time helpers. The greenhouse intelligent control system has applied for national patent. The system...
is an intelligent agricultural remote control system based on Internet transmission. With the help of Internet of things technology, the temperature, relative humidity, light intensity, soil nutrients and other parameters of all flowers and seedlings in the company's 500 mu planting area can be real-time monitored and automatically managed. Employees can also perform remote operation through the intelligent hand and computer login system, such as when the seedlings in a facility greenhouse are long. When there is no light, the system can open the skylight in real time or regularly to make up the light. Other agricultural operations such as watering and ventilation can be controlled remotely by the system. At the same time, the system can self-test whether the machine is running normally. During the epidemic period, the company realized remote management through the company's intelligent digital devices, thus ensuring the normal operation of the company. However, the new crown epidemic led to the decline of the company's revenue. The company hopes to sell products through more channels, and explore and enrich its own e-commerce sales channels.

2.3. Production base case: brand is not loud enough, sugarcane e-commerce marketing is in a bottleneck

Taoshan town of Ruian City has a total planting area of more than 1000 mu of sugarcane. A large number of sugarcane are produced here and sold to all parts of the country every year. However, the current market environment is not very optimistic, there is a certain disorderly competition in the market, and with the competition of similar products leading to the decline of market share, the sales price of Taoshan sugarcane is lower and lower, and the quality of sugarcane production is also uneven. At present, the online sales volume is about 100,000 cases per year. It seems that the sales volume is good, but in fact, it has encountered a sales bottleneck. Because the brand awareness is not enough, the sales volume is difficult to improve. Because the e-commerce channels rely on other e-commerce companies to expand, the product marketing is affected under the epidemic situation. At the same time, the lack of influential brands, sales and popularity is difficult to further improve is the pain point of Taoshan town sugarcane production base. At present, the production base needs to speed up the progress of applying for Wenzhou geographical indication products. First, it should focus on Wenzhou market, and then on Zhejiang market, so as to avoid taking the low-end route and competing with low-cost sugarcane from Guangxi and other places. Through the live broadcast of e-commerce, the sales channels are increased, the traceability platform of agricultural products is established to improve the quality of products, and the school enterprise cooperation is carried out to develop new packaging through joint declaration of projects.

2.4. Case study of small enterprises in workshops: digital marketing of characteristic agricultural products

Ruian Fengchao Ecological Agriculture Development Co., Ltd., located in Shilong village, Longhu, Gaolou Town, Ruian City, is a food workshop specializing in the production of Castanopsis sclerophylla bean curd and its ancillary products. In 2019, it was rated as the leading agricultural enterprise of Ruian City. In the past two years, the workshop has been upgraded and the mechanized production capacity has been improved. At present, the workshop is separated by color steel sandwich board and hung at the door. There are also some related brands, such as the system of purchasing certificates and tickets, the management system of product sales and unqualified products, and the management system of employees. In the workshop, the dressing room, pretreatment area, processing workshop and other areas are set up, which are distinguished by the green food production function area card, and listed in the first batch of 125 famous and special food in the province.

In the past, exhibition marketing can help enterprises to sell a large number of products, but the new crown epidemic has led to the cancellation of many agricultural expositions or the adoption of online exhibitions, which has greatly affected the company's revenue. At the same time, the weak demand after the epidemic has also led to the company's sales lower than in previous years. However, the company plans to expand the planting area of products, and increase the investment in product promotion and sales, especially in the future. It is network marketing channel. Wang Yangliu, the person in charge of
the company, said that the company hopes to publicize the company's products through e-commerce and do enough online product publicity, so that more people can understand the production methods and nutritional value of Castanopsis sclerophylla bean curd and other related foods.

2.5. "Husband and wife shop" case: young farmers' digital agricultural products marketing

Wenzhou Ruian harvest Agriculture Development Co., Ltd. is co operated by founder Yang Rongyu and his wife. The company is committed to building an organic rice, vegetable, fruit and animal husbandry integrated production mode, providing ecological products for the surrounding residents and villagers. Then the couple create the WeChat official account of the harvest farm, the WeChat harvest farm WeChat community, and in 2020, the first community was planned. Stores, through the online and offline linkage, produce pesticide free and pollution-free agricultural products for the middle and high-end consumer market. Due to the in-depth research of two couples of 25-40 year old family consumers, especially the development of infant food, the company has accumulated some experience in the online sales of agricultural products, and also achieved good results. The online marketing of products has been steadily improved, and during the epidemic period Online orders are surging.

3. Analysis on the current situation of agricultural and rural e-commerce in Wenzhou

3.1. The awareness of rural digital development is weak

According to the survey, compared with the comprehensive popularization of urban informatization, in most remote rural areas of Wenzhou, there are still many farmers and small-scale agricultural enterprise owners who do not know enough about informatization digitization, and many large-scale agricultural enterprise owners also do not know enough about the importance of digitization construction, which affects the promotion of agricultural and rural digitization and hinders the construction pace of agricultural and rural production management service. At the same time, because the development, production, circulation and other processes of modern agriculture and rural areas are jointly managed by several departments, there is a certain degree of decentralization of management authority, lack of unified understanding, resulting in limited work efficiency. Weak awareness and imperfect management mechanism hinder the application of agricultural and rural information digital technology.

3.2. There is a shortage of rural digital talents in Wenzhou

In the construction of digital agriculture and rural areas, the adequacy of talents directly affects the role of informatization and the pace of informatization construction. In Wenzhou rural areas, information technology talents, agricultural technology talents, business management talents and other professionals are very scarce, and it is difficult to find compound talents with a variety of skills. At the same time, compared with other industries, the attraction of agriculture is not high. First, the salary of agricultural employees is relatively low; second, the social status is vulnerable to "discrimination"; third, the high-end posts in Wenzhou agriculture There is a lack of space. The development of rural economy is backward, many digital professionals enter the city, few professionals stay in the countryside, the lack of digital technology talents seriously affects the development of agricultural and rural digital in our city. Therefore, it is the key to cultivate a large number of professional and compound talents and encourage them to flow to rural areas.

3.3. The lack of digital application of business entities limits their access to digital dividends

Due to the low profit and long return cycle of agricultural products, agricultural practitioners are very cautious about large-scale investment. However, Wenzhou digital transformation lacks the leading agricultural enterprises with the courage and ability to promote large-scale information upgrading. At present and in the future, the digital transformation in the field of agricultural and rural production may face a more severe test of integrated application. The digital transformation of the vast majority of agricultural and rural production areas in Wenzhou still stays at the level of infrastructure construction and one-way application. At the same time, due to the practical problems of relatively low added value
of agricultural products and difficult maintenance of field Agricultural Internet of things equipment, the progress of digital transformation in agricultural and rural production areas is slow. Therefore, how to deal with the contradiction between the short-term construction and the long-term benefits of agricultural and rural digital transformation more reasonably and break through the dilemma of agricultural and rural digital transformation is still urgent to explore.

4. Countermeasures and suggestions on the development of agricultural and rural digitization in Wenzhou City

4.1. Further consolidate the foundation of digital transformation of agriculture and rural areas in Wenzhou

The first is to comprehensively promote the digitization of agricultural information, give full play to the role of Wenzhou Agricultural and rural big data platform, improve agricultural natural resources, germplasm resources, rural collective assets, farmers and agricultural business entities and other big databases, and build a basic data resource system; the second is to vigorously promote the construction of new agricultural infrastructure, such as urban and rural distributed cold chain cold storage, intelligent breeding base, etc. And intelligent supply chain system, improve the intelligent level of agricultural infrastructure, and consolidate the foundation of digital village construction; third, use cloud computing, artificial intelligence, 5g and other technologies to play a data-driven role, promote data management, data service, data prediction and other production methods, open up all links of data in agricultural production, operation, management and service, and realize accurate production, supply and demand effective docking, digital whole process management.

4.2. Comprehensively improve the digitization level of Wenzhou agricultural industry chain

First, rely on the new generation of digital technology to further smooth the connection channel between the rural production end and the urban consumption end of Wenzhou, and expand the sales coverage of agricultural products; second, encourage agricultural production enterprises, large fresh supermarkets, e-commerce platforms to formulate key standards for the classification, grading and grading of agricultural products, and build an information standard system for agricultural products, so as to promote the commercialization and online commercialization of agricultural products; third, encourage agricultural enterprises, large fresh supermarkets, e-commerce platforms, etc. It is a "base direct purchase mode" to build e-commerce platform for agricultural products sales. It implements digital management at the production end, improves the efficiency of supply chain at the circulation end, aggregates consumption power at the sales end, expands sales market, and opens up the circulation channels of data in the upstream and downstream of agricultural industry chain. Fourth, it effectively integrates the existing cold storage of agricultural products wholesale market, supply and marketing cooperatives, and logistics express companies, and improves the quality of iron products Fifth, speed up the process of "express delivery to villages", innovate and improve the development mode of rural network, and expand the breadth and depth of rural express network.

4.3. Actively explore the new mode of digital agriculture integration in Wenzhou

First, encourage the new generation of digital technology to be widely used in the agricultural industry, actively explore the popularization and replicable mode of agricultural scene + digital technology, and create "new mode, new platform and new ecology" driven by digital technology; second, scientifically develop agricultural and rural resources, sort out and excavate regional culture and human history, develop tourism, leisure, health care, vacation and other products, relying on e-commerce. The third is to fully tap the consumption data of e-commerce platform, develop the intensive processing and cultural creation of agricultural products according to the consumption habits of different regions, different seasons and different groups of people, and form a diversified, quality-oriented and customized agricultural products system.
4.4. Building digital skills popularization system for rural areas

We should establish the training mechanism of digital technology grassroots talents in agriculture and rural areas, select and train professional talents according to the development needs of digital technology in agriculture and rural areas, and improve the overall level of farmers' use and grasp of digital technology in agriculture and rural areas. Drawing on the practical experience of ITU, OECD and other institutions in improving the digital skills of residents in rural and poverty-stricken areas, efforts should be made to improve the basic digital ability of residents in rural areas, enhance farmers' awareness of the digital economy, upgrade the computer courses in academic education and vocational education in rural areas, and reform the digital skills training courses. To carry out special digital skills training for grassroots cadres and rural teachers, organize and implement e-commerce, webcast, inclusive finance training for new agricultural operators, returning migrant workers, left behind women and other groups, as well as computer and mobile phone use skills training for middle-aged and elderly groups in rural areas. Innovative training methods, through the family training, community volunteer training and other ways to improve the training effect.

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