Research on the Role and Path of Big Data in the Convergence of Rural Industries

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Abstract

The integrated development of rural industries is an important measure to build a modern agricultural industrial system, and big data is an important condition for the integrated development of rural industries. This paper objectively describes and analyzes the current situation and weak links of rural industrial integration, and analyzes the role of big data in providing production factors, technical support, endogenous power, and decision-making basis for rural industrial integration. In view of the weak status of rural big data development, it is proposed to improve agricultural and rural data resources by establishing human resource databases, human endowment databases, natural resources databases, agricultural and rural data resource sharing platforms, etc., to improve agricultural and rural data resources, solve the problems of rural industry development, and help rural industry integration develop.

Keywords

Big Data; The Convergence of Rural Industries; Industry chain.

1. Introduction

The integrated development of rural industries is an important starting point to solve the rural "three rural" problems, an important measure to build a modern agricultural industry system, and an effective way to explore the path to agricultural modernization with Chinese characteristics. It has a positive effect on increasing farmers' income and promoting agricultural transformation.

Big data technology is developed on the basis of the Internet. In recent years, big data technology has developed rapidly. The application of big data technology in the marketing of agricultural products e-commerce is of great significance for accurately grasping consumers' purchasing preferences, consumption habits and other information. The mastery and analysis of the above data can accurately classify the types of consumers. E-commerce companies can improve their own corporate benefits through personalized push ,social marketing and other means. At the same time, the application of big data technology in agricultural product processing and sales, catering, leisure and other service industries can also assist enterprises in managing and analyzing data, enhance the vitality and competitiveness of enterprises, and enhance the connections between members of the agricultural product supply chain. This provides a strong driving force for their cooperation with each other.

2. The Current Situation of My Country's Rural Industrial Integration

The integrated development of primary, secondary and tertiary industries in rural areas refers to the organic integration of agricultural production, agricultural product processing and sales, catering, leisure and other service industries through industrial linkage, factor agglomeration,

technology penetration, system innovation, etc., to promote the close connection and coordinated development of the primary, secondary and tertiary industries in rural areas. On the whole, it can be divided into industrial restructuring type integration, industrial extension type integration, industry cross-type integration and industry penetration type integration.

At present, the integration of rural industries is mainly achieved through the following three paths:

One is to create local characteristic industries through the use of unique rural resources; vigorously develop intensive processing, and guide the chain of enterprise development to extend to the countryside; give full play to the function of the commercial service industry, promote the e-commerce coverage of agricultural products and other measures to promote the integrated development of the primary, secondary and tertiary industries in the rural areas, and promote the formation of the entire industrial chain of the three major industries.

The second is to promote the flow of urban and rural elements to the countryside, the construction of a platform for the coordinated development of urban and rural industries, and the role of urban enterprises to play a leading role by establishing and improving the institutional mechanism and policy system for urban-rural integrated development, and improving the mechanism of close cooperation of corporate interests. Then promote the integrated development of urban and rural industries, and realize the complementary advantages of urban and rural areas and mutual benefit and win-win results.

The third is to focus on the actual conditions and needs of the deeply impoverished areas and poor people, support and encourage the development of characteristic resources in the deeply impoverished areas, and achieve the purpose of developing industries in accordance with local conditions. Support and encourage leading enterprises in the industrialization of agriculture to establish a joint interest mechanism with poor areas and poor people, as well as agricultural cooperatives and poor households to form a mutually beneficial mechanism. In short, it is the integrated development of rural industrial revitalization and targeted poverty alleviation[1] .

In terms of the integration of agricultural industries, many places still face the problems of insufficient motivation and insufficient support, which are concentrated in the following aspects:

(1) The driving force of the main business entity for the integration of the agricultural industry is not strong

In terms of current agricultural industrial development, there are problems in many places where the strength of agricultural business entities is not balanced. Although at this stage, various family farms, specialized farmer cooperatives, and various leading enterprises are constantly emerging at this stage, there are still relatively few business entities with corresponding driving capabilities. The self-development ability of the business entity needs to be improved, and the ability to integrate various elements and resources in the agricultural industry is insufficient, which is not conducive to promoting the integration of the agricultural industry.

(2) Insufficient basic conditions for agricultural industry integration

The integration of the agricultural industry relies on many fundamental constraints. However, there are still many weaknesses in the current development of the integration of the agricultural industry. For example, the integration and development bottleneck caused by the lack of rural big data infrastructure and basic information-the asymmetry and non-sharing of data information; the degree of large-scale land operation in many places is not high enough [2]. At the same time, in terms of agricultural industry integration, the level of science and technology needs to be improved, and the insufficient input of various scientific and technological elements has restricted the implementation of agricultural industry integration.

(3) Various services involving the integration of agricultural industries

Among the various factors that affect the integration of the agricultural industry, the service supply system is not perfect. First of all, the problem of the imperfect financial service system of agricultural industry integration is more obvious, and these have brought greater adverse effects on the operation and expansion of agricultural industry operators. Secondly, the relatively backward construction of rural infrastructure and the lagging level of informatization will all have various adverse effects on the integration of agricultural industries.

3. The Development Status of Big Data in Rural Areas

In 2015, the Ministry of Agriculture formulated the "Implementation Opinions on Promoting the Development of Agricultural and Rural Big Data", which aims to use big data to drive the development of the agricultural industry. In recent years, my country has attached great importance to the application of agricultural and rural big data, and agricultural and rural big data is being fully and deeply integrated with the agricultural industry. The data involved mainly include agricultural environment, agricultural climate, crop breeding, crop disease and insect pest control, disease prevention and control of poultry and livestock, and processing and circulation of agricultural products. At present, the use of big data can be traced back to the breeding and seedling cultivation at the source of the industrial chain. The operation and sales of agricultural products in the downstream of the industrial chain are also relatively active, while the production management applications in the middle of the industrial chain are less. Generally speaking, big data has applications in all links of the entire agricultural industry chain, and has played an optimizing role to a certain extent. It has changed the fate of traditional agriculture that depends on the sky and promoted the development of the agricultural industry from traditional agricultural models to digital modern agriculture.

At present, although big data technology has been used in the development of rural industries and achieved certain results, the construction and application of agricultural big data still faces many problems and challenges.

According to the 46th "Statistical Report on China's Internet Development Status" released by the China Internet Information Center, as of June 2020, the number of Chinese Internet users was 940 million, and the number of rural Internet users was 285 million, accounting for 30.4% of the total Internet users; ;the Internet penetration rate in China's urban areas is 76.4%, and the Internet penetration rate in rural areas is 52.3%. Combined with the data released by China Internet Information Center, two conclusions are drawn: first, because about one-half of China's rural areas do not have universal Internet access, only half of the rural permanent residents are Internet users, so it is very difficult for the country to obtain basic data in rural areas；second, because the Internet penetration rate in rural areas is only two-thirds of the urban penetration rate, the gap between the urban and rural Internet penetration rate and the scale of urban and rural Internet users is too large, resulting in asymmetric information between urban and rural areas and difficult data flow.

Since the State Council issued the Action Plan for Promoting the Development of Big Data in 2015, and the Ministry of Agriculture formulated the "Implementation Opinions on Promoting the Development of Big Data in Agriculture and Rural Areas", no follow-up detailed supporting policies and measures have been introduced. This results in the lack of unified planning for the current big data project construction, and the data construction of each department and system is still in a state of self-design and self-management, resulting in different data source standards, small database scales, and difficult data sharing [3]. At the same time, among the operators of rural e-commerce companies, 43.1% of the operators have a high school or technical secondary education level. The overall education level is low, and it is difficult to become a talent for big data mining and application.

4. The Role of Big Data in the Integration of Rural Industries

Because big data has the characteristics of large volume, multiple types, low value density and fast processing speed, it has played an important role in the process of rural industry integration and revitalization.

(1) Provide abundant production factors for the development of rural industries

Big data is a new type of production factor, and its large volume indicates that the content of the data is all-encompassing and involves a wide range of areas. In the implementation of the rural revitalization strategy, in the integration of rural industries, abundant data resources can participate in the development of rural industries in the form of production factors, providing support for the adjustment of agricultural industries, the improvement of agricultural industrial productivity and the utilization of rural land.

(2) Provide forecast information for the development of rural industries

The characteristics of many types of big data indicate that data is flexible and diverse, and can reflect the relationship and development laws between things in multiple dimensions. In the integration of rural industries, it is necessary to make full use of the characteristics of big data, to dig out the associations and laws between various types of agricultural data, and to predict and analyze the development trend of rural industries [4].

(3) Provide decision-making basis for the development of rural industries

The fast data processing speed of big data shows that data grows fast, responds quickly, and has strong timeliness. Scientific decision-making is to promote the development of agricultural industrialization and industrial integration, and to consolidate the foundation of the agricultural product circulation industry chain. It requires a large amount of data as the basis for decision-making. The timeliness of data not only puts forward higher requirements for the timeliness of decision-making, but also provides data support for the forward-looking, strategic, scientific and precise decision-making, and has become the decision-making basis for the integrated development of agricultural production, agricultural product processing and sales, catering, leisure and other service industries.

(4) Provide technical support for stimulating the endogenous power of rural industry integration

Due to the low value density of big data, the density of linked data is relatively small. In the data gap, some new industries developed based on network information technology have been spawned, and the format adjustment of the original related industries has been promoted, such as online direct sales of agricultural products, farmhouses that integrate food, lodging and travel, etc. Therefore, the low value density of big data can provide technical support for discovering and mining the endogenous power of rural development.

5. The Development Path of Big Data in the Integration of Rural Industries

The construction and development of big data is a national chess game. If it is fully integrated with rural construction, it is necessary to make overall planning at the national level, accelerate the pace of rural informatization infrastructure construction, improve relevant policies and regulations, formulate unified big data standards, and strengthen data co-construction and sharing cooperation. How to effectively promote the integration and development of various related industries in rural areas, in view of the incomplete and unsystematic problems of current agricultural-related data, in addition to integrating the agricultural-related data that has been obtained, data related to rural industries and rural revitalization should also be re-collected . The specific path is as follows:

(1) Establish a human resources database and give full play to the advantages of talents

Talent is the first resource for social development, the primary resource for leveraging all resources, and the most important decisive resource. In the implementation of the rural revitalization strategy, to give full play to the supporting and driving role of talents, organizations at all levels must grasp the situation of rural talents in their jurisdictions, and establish a connection between grassroots organizations and rural talents through the human resource database, so as to provide a reliable basis for grassroots organizations to manage and select talents [5]. Rural talents can be divided into two categories, one is the party members and the development targets of party members, and the other is local capable people.

(2) Establish a database of humanistic endowments and dig out regional history and culture

Many regions of the country often have their own unique historical heritage. Pingle Village, Pingle Town, Mengjin County, Luoyang City, Henan Province, is located at the site of the ancient city of Han and Wei Dynasty. Now, the village is famous for farmers' peony paintings, and farmers' painters have developed to more than 800 people. "One painting, one mu of grain, small peony, big industry", Pingle Village takes the development of the peony painting industry as the leader, expands the scale of rural tourism industry, and explores a development model that relies on cultural heritage to build a "beautiful village". And it has realized the integration of agricultural production, tourism, and cultural industries. The construction of a humanistic endowment database is not only to record and protect the local history and culture, but also to spread and share the local history and culture. At the same time, it can also promote and promote the integration and development of related industries in the local characteristic economic chain.

(3) Establish a database of natural resources and give full play to resource advantages

Use cloud computing, satellite remote sensing, Internet of Things and other technologies to establish a data monitoring system for my country's agricultural arable land, grassland, forest land, water resources, climate and other resources, so that the resource advantages and disadvantages of various regions can be clearly seen in the database. In the development of rural industries, use natural resource databases to adapt measures to local conditions, make overall planning and comprehensive coordination, and scientifically formulate industrial development plans.

(4) Establish an agricultural data resource sharing platform and develop comprehensive agricultural and rural information services

At present, my country's agricultural data is scattered in different departments and different systems, which is a fragmented state. The establishment of an agricultural data resource sharing platform aims to integrate existing agricultural data resources and promote the co-construction and sharing of agricultural data in various regions, industries and fields [6]. The platform can use telecommunication networks, cable TV networks and computer networks to directly provide a full range of information services to farmers, enterprises, and cooperative organizations. Agriculture-related users can enjoy the information services provided by the sharing platform at any time, any place, and through any terminal. Establish an agricultural resource data sharing platform. By using the sharing platform, the main body of the agricultural industry chain can grasp and adjust the scale of agricultural products according to the supply and demand pattern and trend of agricultural products, ensure the balance of market supply and demand, guide the effective docking of agricultural products and the market, and realize the integration of agricultural industry chain.

6. Summary

Establish an agricultural resource data sharing platform, and realize the integrated development of various sectors through the use of big data technology to penetrate into the various links of agricultural production, operation, management and service, promote the

precision and intelligentization of agricultural production and operation processes, and promote specialized information services in the whole process of agriculture before, during and after childbirth, so as to provide solid support for the implementation of the Rural Revitalization Strategy.

Acknowledgments

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