

Research on the Development and Management of New Agricultural Business Entities Based on the Analysis of Industrial Factors

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Abstract—Developing multiple forms of moderate scale operation and cultivating new agricultural management subjects are the way forward and the necessary way to build modern agriculture. Based on the analysis of production factors at the present stage, this paper composes the 1,240 valid samples obtained from the questionnaire survey, then selects the multivariate Logit model to analyze the factors of agricultural industry development at the present stage, conducts research on the collaborative relationship among new agricultural business subjects, and finally puts forward management suggestions for the development of new agricultural business subjects. The study aims to promote the widespread application of new agricultural business entities in order to promote the improvement of agricultural business management schemes and lay the theoretical foundation for sustainable agricultural development.

Keywords-Industry, Logit model, factors of production, agricultural management

1 INTRODUCTION

In recent years, the state has attached increasing importance to the development of rural modernization and industrial integration, and industrial integration has gradually become a research hotspot. The mobile Internet industry has entered a stage of rapid development, and "Internet+", "China Industry 4.0" and "Internet+Agriculture" are all current research hotspots. According to Liu ke, we need to further explore the realistic path of developing short videos for "three rural areas" by taking advantage of short videos to solve the problems of "three rural areas" and help rural revitalization [1]. Ma Xiaohe believes that it can expand the scope of industry and increase the income of farmers. E.M. Gelb and others proposed that updated and comprehensive information, new types of "just-in-time", more and competing sources of information, and more and more information on agricultural production and transaction costs should be provided. and competing sources of information, information exchange and discussion of these issues, easier collaboration or contact with peers, other farmers and experts. Although the technologies offered are becoming more common in agriculture. Wei Xiaobei et al. proposed from the context of "Internet +", the application of "Internet +" and modern technology in the agricultural industry chain, "smart agriculture" and "rural e-commerce "

become an important driving force for the upgrading of the whole agricultural industry chain. It has a long history in the United States, with the education of students dating back to 1728. With the advent of the era of fusion media, media convergence has gradually stepped into the stage of deep development, and the innovation of 5G network, artificial intelligence, Internet of Things and other emerging technologies has driven the reconstruction and evolution of the media convergence ecosystem. The "Internet +" agricultural industry also increases the income for farmers themselves and moreover, it is a force for the construction of rural revitalization. It can be seen that it is of great importance in terms of new agricultural industry, and it is also a practical application value to combine the current short video network for agricultural industry research practice [2-3].

2 ANALYSIS OF THE CURRENT STATE OF PRODUCTION FACTORS

2.1 Analysis of the development status of human factors

Labor force transfer: The loss of rural labor force has become a widespread concern. One is related to the seasonality of agricultural production harvest, i.e. harvest season transfer, which is a form of labor force transfer that belongs to working in the town and returning to the countryside to the agricultural harvest season. Secondly, it is a form of working in the city and contracting the land in the hometown to others for a certain fee, and not choosing to return to the countryside in contrast to the harvest season [4]. That is, long-term transfer, but after working in the town for a certain period of time, will return from the town to the countryside for return to agriculture.

Employment of rural labor: A research team, De Brauw et al. found that the percentage of non-farm employment was only 15% in 1981. In 2007, the percentage of employment increased to 56.7%. It can be seen that the proportion of non-farm employment in China's rural labor force is increasing and developing at a relatively fast pace. Some surveys show that the employment rate of men is higher than that of women. The proportion of non-farm employment has reached 61% in 2011, and the results of Zhang et al. show that the proportion of non-farm employment has reached 70%. Analyzing the adequacy of non-farm employment of rural labor force from the perspective of gender [5], it can be concluded that the adequacy of employment of male labor force is higher than that of female. According to the data from the Land Labor Force Survey and the China Rural Development Survey, it can be seen that the overall employment is increasing.

2.2 Analysis of the development status of capital elements

Rural financial institutions are mainly divided into two types: formal financial institutions include Agricultural Bank of China, rural commercial banks, postal savings banks, China Agricultural Development Bank, rural cooperative banks and rural credit cooperatives, while informal financial institutions include rural community development funds and rural capital mutual societies.

The development of financial institutions in rural areas is unbalanced. In some areas with a high level of economic development, such as the Yangtze River Delta in the east of China, the number of financial institutions is larger in number and scale compared with other areas; secondly, there are more financial services and financial products, so there is a lack of innovative products in the rural areas. The uneven development of financial institutions in rural areas, so the development of capital, financial institutions in the scale of management is relatively lagging behind [6].

2.3 Analysis of the development status of land factor

Land is one of the important factors, in terms of land system reform. It is mainly divided into two aspects, firstly, it is the land reform rural economic development can be improved; secondly, it is the land factor is the urban and rural areas between the urban and urban economic development continuously. Land is playing an important role as the most basic factor of production in agriculture. First of all, rural construction needs land, deserted also caused some of the waste of resources; secondly, the construction of modern agricultural operation, public facilities engineering construction. It also includes the construction of agricultural production facilities related to the planting, production, storage and transportation as well as sales of agricultural products, focusing also on supporting the development of the combination of rural three industries [7]. For example, the analysis of the development of the land element of intelligent agriculture between agriculture and the Internet.

2.4 Analysis of the development status of technical elements

Professional and technical personnel of agricultural subjects should have a better understanding of the basic conditions of agricultural products production. The analysis can be based on targeted professional agricultural technology analysis and research, as well as the development of agricultural production corresponding to the new agricultural business demand situation. The Central Document No. 1 basically puts forward the three agricultural points of the year accordingly every year, and every year China's agriculture and rural areas produce corresponding changes every year according to the relevant policies, which also bring about corresponding changes in the rural economy and agricultural production macroscopically, and will reflect more obviously the targeted needs in many aspects such as agricultural business management.

3 ANALYSIS OF THE ELEMENTS OF AGRICULTURAL INDUSTRY DEVELOPMENT AT THIS STAGE

3.1 Data source

The survey was conducted from March to September 2020 by means of questionnaires from social groups through Questionnaire Star software. The social groups came from most of the provinces and municipalities directly under the central government, which is very representative and exemplary. A total of 1,369 responses were received. In the questionnaire Star, we can see that some information is not completely filled in, so it cannot be used directly.

It is necessary to carry out screening out the wrong and other questionnaires, and the most total of 1240 valid samples were obtained. Some scholars also conducted a survey on the basic household situation, household work and its income, land distribution and transfer, agricultural production, self-employed business and industry, household income and consumption structure of farm households. And calculations were performed to summarize the findings.

3.2 Variable selection

According to the theoretical model, the impact of short video communication of rural production factors on the effect of new agricultural industry operation is analyzed. The factors of production are divided into capital, technology, land, and labor variables to measure. Since the new agricultural industry operation is abstract and needs to be measured indirectly, this paper uses the satisfaction of the operation effect to measure. The variables were selected and described as shown in Table 1:

Table 1 Variable selection and variable description

Variable Type	Variable Name	Variable Description
Explained variables	Willingness of the main business Y0-Y4	0=reluctant; 1=unwilling; 2=fair; 3=willing; 4=willing
	Main business effect Y5-Y9	5=very dissatisfied; 6=unsatisfied; 7=fair; 8=satisfied; 9=very satisfied
	Age Z0	0=Under 20 years old; 1=21-20 years old; 2=31-40 years old; 3=41-50 years old; 4=51-60 years old; 5=60 years old and above
	Education level Z1	0=Elementary school and below; 1=Junior high school; 2=High school; 3=High school; 4=Bachelor's degree and above
	Gender Z2	0=Male; 1=Female
	Capital loan Z3	0=None; 1=Yes
	Annual income Z4	0=less than RMB 50,000; 1=RMB 50-100,000; 2=RMB 100-150,000; 3=RMB 150-200,000; 4=RMB 200-250,000; 5=RMB 250,000 and above
Explanatory variables	Operating land Land years Z5	0=5 years and below; 1=5-10 years; 2=10-15 years; 3=15-20 years; 4=20-25 years; 5=25 years and above
	Land type Z6	0=plain; 1=mountainous; 2=hilly; 3=highland
	Planting scale Z7	0=20 acres and below; 1=21-40 acres; 2=41-60 acres; 3=61-80 acres; 4=81 acres and above
	Land transfer Z8	0=5 years and less; 1=6-10 years; 2=10-15 years; 3=15 years; 4=15 years and more
	Land quality Z9	0=poor; 1=fair; 2=good
	Farming conditions Z10	0=poor; 1=fair; 2=good; 3=convenient
Agricultural expertise Z11	0=Cannot get technical guidance on agriculture; 1=Can get technical guidance on agriculture	

	Types of technology Z12	0=Operation management; 1=Marketing; 2=Specialized farming; 3=Integrated development
Control variables	Sources of professional learning Z13	0=books; 1=relatives and friends; 2=inquiry on the Internet; 3=consultation with experts
	Land area Z14	0=rural; 1=town (usually suburban)
	Management system Z15	0=No financial disclosure; 1=Financial disclosure
	Costs and profits Z16	0=no performance; 1=performance

3.3 Test results and analysis

In this paper, a multivariate logit model was chosen to conduct the analysis and then assess the effect of the new agricultural production factor operation.

Table 2 Table Type Styles

Variable Category	Y1 Operation Management	Y2 Marketing and Sales	Y3 Specialized cultivation	Y4 Integrated Development
Education level Z1	0.265	0.135*	0.389*	0.257*
Gender Z2	0.025	-0.025*	-0.067	0.246
Capital loan Z3	0.0359	0.405	0.018	0.257*
Annual income Z4	0.349*	0.349	0.252*	0.316*
Operating land Land years Z5	0.137	0.269	0.189	0.135
Land type Z6	0.465	0.431	0.427	0.275
Planting scale Z7	-0.295**	0.241	-0.287*	-0.31
Land transfer Z8	0.131*	0.131	0.427	0.288*
Land quality Z9	0.257	0.274	0.275*	0.429
Farming conditions Z10	-0.031	0.242	0.242	0.131*
Agricultural expertise Z11	0.269**	0.351*	0.351	0.319
Types of technology Z12	0.255	0.407	0.404*	0.018*
Sources of professional learning Z13	-0.135	0.252	0.252	0.351
Land area Z14	0.019	0.431	0.428*	0.128
Management system Z15	0.255	0.425*	0.437**	0.275
Costs and profits Z16	0.315	0.291*	-0.291	0.252**

* represents passing the test with 10% probability; ** represents passing the test with 5% probability.

By looking at the correlation test on the correlation coefficients of 16 variables, there is no cointegration problem between each variable. The following four conclusions are drawn.

(1) In terms of human factor, the education level has a significant influence on the operation management, which shows that the operation management needs to strengthen its own knowledge and management level; in terms of capital factor, it has a significant influence on the capital loan and its own reserve capital. In terms of land factor, land type, size, and quality have significant effects, and the operation and management of land is relatively more demanding; in terms of technology factor, agricultural technology, type of agriculture, have significant positive effects. Finally, the control variables, land area and management system also have a certain influence on operation and management.

(2) For marketing, in terms of human factors, education has a certain influence, and it can be seen that marketing requires people with a certain level of education; in terms of financial factors, loans and own reserve funds have a positive influence. It can be seen that capital is also important for marketing; in terms of technology factor, because technology is a special need, agricultural technology, type of agriculture, have according to a significant positive impact. Finally, the control variables, land area and management system have a significant impact on the impact of operational management, the establishment of monitoring mechanisms to safeguard democracy and promote the motivation of sales staff.

(3) For professional planting, in terms of human factors, the degree of education has a significant impact, it can be seen that professional planting is very large in scale and requires certain resource factors for allocation; in terms of financial factors, in terms of capital loans, their own reserve funds have a significant impact; in terms of technical factors, technology, type, have a significant impact, the use of mechanization for large-scale professional planting, and greatly improve the efficiency of planting; finally control variables, management system has a significant impact on the operation and management, improve the professional management in planting to improve productivity.

(4) For integrated development, in terms of human elements, it can be seen that the level of education and culture of people in integrated development needs to be very important for their own knowledge reserves; it is necessary to rely on knowledge to carry out operations; in terms of financial elements, in terms of capital loans, their own reserves of funds have a significant impact, it can be seen that integrated development developers need a lot of money for research and development of new products to serve society. Therefore, it is important to pay attention to the financial aspect in terms of integrated development; in terms of technical elements, agricultural technology, agricultural types, all have a significant impact on the higher requirements for technology; finally, the control variables, land area also has a certain impact on integrated development, more developed areas than the general underdeveloped areas.

4 RESEARCH ON COLLABORATION AMONG NEW AGRICULTURAL OPERATIONS

In order to further serve the operation of new agricultural industries, it is necessary not only to obtain the elements of the impact of new agricultural operations, but also to understand Chinese agricultural operations and their transformation. Research on the collaboration among business subjects and the specific situation of business subjects in the development process is also helpful to improve the comprehensive influence of new agricultural business subjects in China.

Industrial transformation: With the development of agriculture agricultural subjects have also gradually adapted to the changes in productivity levels and vigorously developed the modernization of agriculture, and a series of changes have occurred among farmers, from farmers to leading agricultural enterprises, which carry out processing. Farmers' cooperatives, agricultural socialization services specifically belong to the main body of production services. In turn, agricultural leading enterprises, professional households, family farms belong to the main body of agricultural production [8].

Cooperation of "company + farmer": Among the new agricultural management subjects, farmers and enterprises collaborate and have the ability to supervise each other, which drives the enthusiasm of farmers. Leading agricultural enterprises provide certain technology and management to share benefits and risks [9]. The two business entities are equivalent to a mutual cooperation model, and are responsible for their respective areas of expertise to maximize benefits. In the process of agricultural production, if risks are encountered, then the cooperation between the two can reduce the risks and correspondingly reduce the respective losses.

Multiple subjects coexist: In the process of operation, a variety of new agricultural business subjects coexist, several business subjects can better achieve the benefits of agricultural industrialization to maximize, and the agricultural socialization service system is constantly improved to provide business management and financial support services for agriculture from production, management and sales. Therefore, the coordination and information interchange between them is conducive to improving the management level of agricultural socialized service system and leading agricultural enterprises, and providing a strong guarantee for the development of new agricultural industry under rural revitalization [10].

5 NEW AGRICULTURAL BUSINESS ENTITY DEVELOPMENT MANAGEMENT SUGGESTIONS

Specialized planting: such as vegetable planting pest control, rice cultivation technology, wheat fertilization and maintenance of flower cultivation and low yield transformation technology. We employ professional and technical personnel to give lectures, so that the knowledge is accurate and authoritative, and the agricultural subjects can understand it as soon as they hear it and see it. The illustrations can bring freshness and interest to agricultural subjects, and more importantly, enhance their intuition and practical ability to obtain practical results.

Operation management: At present, the research on agricultural subjects in China mainly focuses on farming input factors, the degree of part-time employment, the scale of production,

or macro factors to study the behavior of farmers. Research on agricultural land transfer. In contrast to domestic research, foreign research on farm households mainly focuses on economics and sociology, and some scholars have studied the time allocation of agricultural subjects. Then there is the systematic research on new agricultural industrial operation, which constitutes a systemic knowledge structure.

Comprehensive development: Firstly, comprehensive agricultural development is an important way to improve the comprehensive agricultural production capacity; Secondly, it is the strategy for the construction of modern demonstration areas of comprehensive agricultural development; The third is the comprehensive agricultural development in the new era of the strategic protocols; The fourth is to adhere to the objectives and strategies of comprehensive agricultural development and comprehensive benefits; The fifth is to inherit and carry forward the successful experience of comprehensive agricultural development; The sixth is the history of the generation, development and changes of comprehensive agricultural development; The seventh is to expand the feasibility of the agricultural comprehensive development project approach recommendations.

Marketing: increasing agricultural production by smallholder farmers requires expanding their inputs for productivity improvements, such as improved varieties and breed and fertilizer opportunities and procedures and knowledge about appropriate agronomic and livestock management practices, including investments in seed variety development and reproduction, producer price support, and fertilizer subsidies; Marketing countermeasures for Wuchang rice, a green product of Heilongjiang, product processing strategy, quality and safety strategy, price strategy, brand building strategy, promotion and publicity strategy, and strategy to broaden the distribution channels of Wuchang rice.

6 CONCLUSION

The emergence of new agricultural industry business entities has laid a good foundation pavement for the next generation of new agricultural industry, and the Internet as an object is also an important embodiment of promoting new rural construction. This study can provide a strong guarantee foundation for the future direction of agricultural development of scale and mechanization, in order to expand the access to information channels of agricultural industry and play the role of information resourceful allocation. In the new agricultural industry operation, agriculture-related modern agriculture and traditional agriculture are all hot spots for research. We hope more scholars will plunge deep into this field and contribute academic strength to the new agriculture and new rural development together.

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