

Agricultural Human Capital Potential on Agricultural Technology in Western China

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Abstract: Agriculture is the foundation of the national economy, and backward human resources development in the western region is the key factor that causes the gap in human resources between the east and the west. With the resolute battle of poverty alleviation and comprehensive entry into the "zero" stage, it becomes increasingly important to implement precise agricultural technology research in the western region. This research uses literature analysis and qualitative survey methods to investigate and collect basic data on the basis of previous studies. Combined with the practical experience of agricultural enterprise talent development and utilization in Province A, the Solow residual value method is used to return data in Province A. Analysis shows that the proportion of junior technical staff is 82%, and the intermediate and senior levels are 12% and 6%, respectively. It is found that the proportion of high-quality agricultural technical staff in Province A is small. Finally, the inductive method is used to summarize the development potential of agricultural human capital and agricultural technology in the western region. This article starts with the basic theories of human resource management, analyzes the current situation and problems of human resource management in western agricultural enterprises, and finds out the shortages and deficiencies that restrict the development and utilization of human resources in western agricultural enterprises. Secondly, through analysis, find out the real needs of agricultural enterprises in the western region regarding talent development and utilization. It is concluded that clarifying the potential of agricultural human capital in the western region and correctly increasing the agricultural human capital in the western region is crucial to the development of agricultural technology in the western region.

1. Introduction

With the in-depth development of China's poverty alleviation movement, China is in the decisive

stage of building a well-off society in an all-round way, but the problems of imbalance, inconsistency and unsustainability in development are still outstanding. The deep-seated contradictions that restrict the development of poor areas still exist; especially in the western regions the task of poverty alleviation and development in contiguous areas is still very arduous. Regional poverty in rural areas in the west has seriously impeded China's regional economic and social cooperation. The potential adjustment and development of agricultural human capital in the rural areas of the west has greatly affected the process of building a well-off society in an all-round way, and it is urgent to change it as soon as possible.

Agriculture is the foundation of the national economy, and it is based on the urgency of deep integration of the backwardness of modern agricultural human capital and the industrial poverty alleviation in the western region. This issue attaches great importance to agricultural development in the western region, and studies the impact of agricultural human capital potential in the western region on agricultural technology to improve agricultural efficiency, promote farmers' income, build a modern agricultural service system with high yield, high efficiency, and high quality, and promote the western region with the upgrade of traditional agricultural human capital. The industrial poverty alleviation in the poor areas is of great significance [1-2].

Started from the basic theory of human resources, Yi WEN believed that human capital is becoming the main driving force for economic growth and social development. Yi WEN selected the relevant data of rural economic growth in Hubei Province as a sample, and analyzed the contribution of physical capital and human capital to rural economic growth through the new C-D function and SPSS22.0. The results show that in the development of rural economy, the impact of human capital elasticity is greater than the impact of physical capital; high-quality rural human capital storage and the average years of education of rural labor will increase rural households' net income. Therefore, it is necessary not only to increase the input of physical capital, but also to increase the input of human capital in order to improve the level of human capital in rural areas and promote the sustainable development of the rural economy [3]. Hisham believed that data from agricultural resource management surveys and multiple regression procedures are used to test the role of human capital in affecting farmers' income. Hisham's research results show that higher education plays an important and positive role in higher education, in addition to the lowest and highest levels of farming and outdoor income distribution [4].

The characteristic of this study is to use literature analysis and qualitative survey methods, especially to use qualitative survey methods, to investigate and collect basic data on the basis of previous studies, combined with the practical experience of talent development and utilization of agricultural enterprises in Province A, and use Solow residual method, regression analysis of province A data, the proportion of junior technicians is 82%, and intermediate and senior are 12% and 6%, respectively. It is found that the proportion of highly qualified agricultural technicians in province A is small. The internal needs of agricultural human capital development and utilization in the western region are re-internally analyzed, and a mechanism for developing and utilizing agricultural enterprises in the western region is proposed. Put forward rationalization suggestions for western agriculture, construct a technology plan suitable for western agriculture, and find out the true needs of agricultural enterprises in the western region regarding talent development and utilization.

2. Proposed Method

2.1. Importance and Issues of Agricultural Development in Western China

First, agriculture is the foundation of the national economy. Firstly, agricultural products produced by agriculture are the basis for human survival and development. That is to say,

agriculture is often said to be the source of human clothing and survival. This basic meaning applies to both the agricultural society, the industrial society, and the future information society. As Marx pointed out: "the most civilized nations, like the least developed uncivilized nations, must ensure that they have food before they can think about other things; the growth of wealth and the advancement of civilization are usually related to the production of food. The required labor and costs are reduced in equal proportions. "Second, agriculture is the foundation of the national economy, and the good ecological environment created and maintained by the ecological agricultural system is the foundation of human survival and sustainable development of the non-agricultural sector. Often the traditional theory of basic agriculture only says that food production is the foundation of the national economy. This is not enough. It should be added that the ecological agricultural system is also the foundation of the national economy. This reflects that the ecological agricultural system is in a particularly important position in the development of agricultural productivity, and reflects the fundamental characteristics of agricultural production and the ecological nature of agricultural development. Third, agriculture is the foundation of the national economy. Starting from agriculture as a source of human clothing and food and a good ecological environment, it must be shown that agriculture is the basis for the survival and development of the non-agricultural industry sector of all societies. This is not only because agricultural surplus labor or agricultural surplus products are the natural basis and prerequisite for the non-agricultural labor sector independence, but also because of the factor contribution and market contribution formed by the sharp increase in agricultural surplus labor or agricultural surplus products, which constitute all sectors of the national economy. The basis for sustained and rapid coordinated development. What can't be ignored is that in connection with the basic role of the ecological agriculture system, agriculture also has an ecological contribution to the sustained and coordinated development of the national economic sector. And the more developed or newly industrialized countries in the process of industrialization, the more they pay attention to the ecological contribution of agriculture [5-6].

Although the situation of human resources management in western agricultural enterprises has improved greatly in recent years, the quantity and quality have improved to some extent, but compared with advanced developed regions, the overall level is still relatively low, the level is relatively backward, and there are still many problems. Cannot meet the requirements of modern market competition and social development [7].

2.2. Introduction to Specific Theory

(1) Herzberg's need for two-factor theory

Herzberger's need two-factor theory holds that satisfaction factors at work are related to work content, called motivation factors; dissatisfaction factors at work are related to work surroundings, called health factors. Herzberg divides Maslow's five levels of demand into two categories, namely lower-level needs and higher-level needs. Lower-level needs include physical, safety, and social needs, while higher-level needs have incentives. Herzberger believes that factors that meet lower-level needs are called health factors, and those that meet higher-level needs are called incentives. He pointed out that the health factor is not a good way to motivate, because lower-level employees need to be more easily satisfied, and they can't make employees very satisfied or motivate them to increase output. Herzberger also believes that mobilizing people's enthusiasm is mainly from within the person and from the work itself to mobilize people's internal enthusiasm, by enriching the work content, providing a sense of achievement, recognition, responsibility and more challenging job opportunities these factors are the motivating factors [8].

(2) Expectation theory

Expectation theory emphasizes that personal expectations can motivate the upward power of individuals. Expectation theory holds that a person's decision-making is the product of three common concepts, namely value, performance award estimates and expectations. Value is the employee's evaluation of the value of the reward. The performance award estimate refers to the reliability of high work performance that can be rewarded, while the expectation is that the employee is confident that he will get good performance through hard work. These three aspects affect the realization of employees' potential. Employees who think they can bring high performance to their work through hard work and who are estimated to be rewarded for their achievements will increase their motivation to work, and the rewards they receive will be consistent with their expectations. This prompted him to keep this kind of work enthusiasm. These three relationships can be expressed as:

$$\text{Value} \times \text{Expectation} \times \text{Performance Award Estimation} = \text{Motivation}$$

There can be an infinite number of combinations of the three factors in the expectation model, and the combination that produces the strongest motivation is high value, high expectation, and high winning estimates. If the desire to get paid is high, but the other two estimated probability values are low, the motivation is at best a medium level. If expectations and performance awards are low, then the value is high and motivation is weak. According to this theory, whether compensation can become a motivating factor depends on the relationship between effort, performance and compensation. In other words, the hard work of employees leads to high performance, and high performance corresponds to high pay. Money can be an effective motivating factor only when the strength of the connection between effort and work performance and the strength of the relationship between work performance and compensation are large enough [9].

(3) Solow residual method

In 1957, the American economist Solow proposed the method of measuring technological progress-the Solow residual value method. The basic principle is to start from the C-D production function and establish the quantitative relationship between economic growth and various input factors [10]. Assuming that the technological progress is Hicks neutral and grows at a fixed exponential ratio, and then the model is expressed as:

$$Y_t = A_0 e^{m_t} K_t^\alpha L_t^\beta \quad (1)$$

It can be seen from formula (1) that the model mainly includes four variables: output, level of technological progress, capital K , and labor L . Among them, the variables m_t that represent technological progress over time. The parameters α and β represent the output of capital input and labor input K and L , respectively elasticity. From the economic significance of output elasticity, we can know that $0 \leq \alpha \leq 1$, $0 \leq \beta \leq 1$. Do a simple logarithmic transformation to Equation (1), which can be transformed into a linear model, that is:

$$\ln Y_t = \ln A_0 + m_t + \alpha \ln K_t + \beta \ln L_t \quad (2)$$

Assuming that the scale of agricultural production is unchanged, that is, $\alpha + \beta = 1$ equation (2) can be transformed into:

$$\ln(Y_t/L_t) = \ln A_0 + m_t + \alpha \ln(K_t + L_t) \quad (3)$$

In order to consider the different impacts of human capital on the agricultural economy, this study introduces labor quality variables and merges them with labor quantity into human capital stock variables. The model can be set as:

$$\ln(Y_t/H_t)=\ln A_0+m_t+\alpha\ln(K_t/H_t) \quad (4)$$

Among them, it represents the total human capital stock that combines the quantity and quality factors of labor. The regression analysis of the production function model can obtain the output elasticity sum of agricultural material capital and human capital, so that the total factor productivity in the first year can be calculated by using formula (5):

$$TFP_t = \frac{Y_t}{K_t^\alpha H_t^\beta} \quad TFP_t = \frac{Y_t}{K_t^\alpha H_t^\beta} \quad (5)$$

The technological advancement rate for the first year is:

$$tfp_t = m = \frac{TFP_t}{TFP_{t-1}} - 1 \quad (6)$$

2.3. The Role of Human Resources in Agricultural Enterprises in Western China

At present, talents have increasingly become a key factor in the realization of the strategy of agricultural enterprises in the west, especially in western agricultural enterprises [11]. The role and status of talents, especially the core talents of agricultural enterprises in the western region, in the realization of corporate strategy are mainly reflected in the following aspects:

(1) Strategy formulation and implementation

The corporate strategy formulation process involves information collection capabilities, comprehensive analysis capabilities, and the judgment of senior management talents. Decision-making capacity places high demands. At the same time, the cornerstone of the long-term stability of the established strategy is a united and dedicated leadership team. The implementation of any corporate strategy is a process full of variables, risks, and challenges. Only a highly dedicated staff team can always have confidence in the future of the enterprise and is willing to cooperate with the enterprise to advance and retreat and grow together.

(2) Creating core values

Core values refer to organizations and cultures that exist in society and are completely different from other enterprises and cannot be imitated. Having a relatively strong talent team is vital to the survival and development of western agricultural enterprises. Pushing power. Due to many conditions, the western region must invest more in talent. Both management talents and technical talents play an important role in establishing the core value of the enterprise. Managers can create different mechanism designs and corporate cultures than other companies; technical talents can achieve technological breakthroughs and create leading technologies. Implement a differentiation strategy. In order to create the core value of the enterprise.

(3) Talent attraction and group effect

There is a huge “group effect” in human resources, that is, human capital has accumulated more high-level talents in the entire human resources team. Not only does it play a direct role in economic and social progress, but it is often this or other areas of the industry. The discoverers, trainers and users of talents, a high-level talent, will have a corresponding demonstration effect and promotion effect on the talent team construction of the entire field or department. In turn, the precipitation of more human capital in a certain field or department will also promote the competition, learning and innovation of the entire talent team in this field. This is an important reason for the emergence of talents in a certain region or unit that is relatively concentrated in reality. This is also one of the important rules for talent growth and training. This point is of great significance to the development of agricultural enterprises in the west. It is more difficult for

agricultural enterprises in the west to attract talent than in the east. If an enterprise can introduce and cultivate a strong and innovative talent team, it will be able to attract more talents to join the "group", which is very beneficial to the mid-to-long-term development and long-term strategy of agricultural enterprises in the west.

2.4. Development and Utilization of Human Resources in Agricultural Enterprises in Western China

In general, most agricultural enterprises in the western region are still in their infancy in terms of talent development and utilization. With the continuous deepening of corporate system reform and continuous adjustment and improvement through their own, many agricultural enterprises are developing and utilizing talents. Some achievements have been made. It is embodied in the following five aspects:

(1) Pay great attention to talent introduction

As mentioned above, the quality of labor resources in the western region is generally lower than in the central and eastern regions. The shortage of human resources has become a "short board" that restricts western agricultural enterprises to further optimize the industrial structure and enhance market competitiveness. In order to make up for this "short board" Many agricultural enterprises in the western region have begun to fully take advantage of the state's preferential policies for talent mobility in the western region in recent years, continuously improve the academic level of the talent team, increase the salary and welfare compensation of imported talents, and actively participate in talent exchange meetings at all levels and Various ways such as signing training agreements with universities, increasing the introduction of various talents, and improving their own talent team structure. 2. Focus on the subdivision and specialization of the talent team Many agricultural enterprises in the western region are paying more and more attention to the subdivision of the talent team. Through the continuous clarification of department posts, rationalization of personnel deployment in various departments in accordance with standards such as education level, ability level, and age structure, and through the formation of various professional teams, continue to strengthen the professional construction of various types of talent teams.

(3) Continuously improving the salary management system

In recent years, agricultural enterprises in the western region have continued to refine and improve the salary management system for internal talents by implementing job linking with pay, business performance and pay linking, etc., which has stimulated the business potential of many talents and created business opportunities for them. Great value for money.

(4) Actively exploring corporate talent training models

In recent years, many western agricultural enterprises have been actively exploring the talent training model that suits the requirements of enterprises based on the actual situation of their own talent team. For example, a successful example of the restructuring of a company in A and a typical representative of an agricultural enterprise in the west has done a lot of fruitful work in personnel training. On the one hand, the company actively marries with colleges and universities and scientific research institutions to send potential talents to colleges to further their theoretical knowledge; on the other hand, after the completion of the study, this part of the talents will be enriched to the important positions of various departments for practice and make full use of The company's strong human resources, mutual exchanges, and continuously improve the comprehensive ability and quality of the company's talents.

(5) Create opportunities to provide talents with a platform to showcase their talents

Although agricultural enterprises in the western region are affected by regional economic development, there are not many opportunities for talents to show their strength. However, many

companies still try their best to build a platform for talents in limited opportunities, provide support, allow various types of talents to actively participate in corporate decision-making, and dare to bear the burden of competent and talented people in their business activities. Many young talents are encouraged and willing to stay in the west to contribute their talents.

2.5. The Definition and Development of Agricultural Technological Progress

From the perspective of production technology itself, it must be applied in various industries. From this perspective, production technology is industrial technology. Since it is industrial technology, it must be a fusion of production technology and soft technology using production technology. For production technology, that is, hard technology, if there is no corresponding soft technology to support it, its due functions cannot be exerted, and even its functions will be lost. Judging from the content of technological progress, technological progress is not just about the progress of various technologies in production. It also includes the coordination and improvement of the proportion and connection between various technological means. The role of coordination and improvement is often Soft technology. From the economic significance of technological progress, the improvement and innovation of old technologies and the development and promotion of new technologies have resulted in the production of more products with the same input or the production of the same products with fewer inputs. application. Such as making reasonable adjustments to unreasonable production layout, improving the quality of workers, and so on. Due to the advancement of production technology, the development of new products, new production, and new markets, resulting in changes in production and market structure, also requires soft technology to rationally allocate resources and conduct moderate scale operations to achieve comprehensive utilization of resources. From the perspective of technological progress, technological progress is to make production achieve better social, economic, and ecological benefits. In this case, all technologies that can improve production efficiency should be the content of technological progress, from a certain perspective Soft technology can better improve production efficiency. People usually put forward the slogan of "requesting benefits from management". The reason lies in this.

In fact, the narrow technological advancement viewpoint emphasizes the improvement of production efficiency through the improvement and application of hard technology itself. In reality, this pure form is rarely encountered. The impact of hard technology and soft technology on economic growth coexist and intersect. For example, we can confirm that the improvement of soft technology (such as the improvement of management, decision-making, and management skills caused by the improvement of labor quality) is driven by the improvement of hard technology (such as the improvement of labor methods, which makes it possible for workers to switch from production The quality of laborers can be improved by getting out of education, but at the same time, no one can deny that the transformation of hard technology into actual productivity depends on the improvement of labor force quality and the improvement of management, decision-making, and management. For example, From a large number of economic historical facts, we can also observe that the period of major breakthroughs in social science and technology and the course of major changes in social and economic structure always occur at about the same point in time. Therefore, it can be said that technological progress in a narrow sense is in reality China cannot exist independently. In reality, sometimes we emphasize the role of hard technology in improving production efficiency, but this is relative. Analyzing it in theory, it is hypothetical to a certain extent. Therefore, we more in favor of the broader theory of technological progress.

In view of the above, we believe that the so-called agricultural technological progress involves several basic processes that are interdependent and integrated. That is, agricultural technological progress is a process of constantly creating new knowledge, transforming, innovating, and

developing new technologies; it is a process of continuously applying new knowledge and new technologies to agricultural production practices; and it is also an application of advanced material equipment and applications. Means of rational and effective allocation of resources, the process of transforming new knowledge, new technologies and original production factors (inputs) into long-term multiplication of agricultural products, and continuously improving the social, economic and ecological benefits of agricultural production. We can see that agricultural technological progress has three meanings. One is the emergence of new agricultural knowledge, new technologies, and their use. This is the most basic meaning of agricultural technological progress; the second is that inputs (that is, factors of production) are engaged in production at a new combination ratio, that is, the means for obtaining a reasonable and effective allocation of resources (including management, operation, decision-making, planning, Organization and other means) engaged in production. This is the meaning of the expansion of agricultural technological progress. The third is that the new knowledge, new technologies applied to agricultural production, and the means for rational and effective allocation of resources must bring long-term and stable economic benefits. This benefit includes the social, economic and ecological benefits of agricultural production. This is also the essential meaning of agricultural technological progress. The essence of agricultural technological progress is reflected in its ultimate purpose, that is, it can make any combination of original production factors in agricultural production produce more products than without agricultural technological progress, and obtain better society and economy. And ecological benefits, or to use fewer production factors than before to obtain as many products as before and the same good social, economic and ecological benefits [12].

The development of agricultural technology is not limited to the development of agricultural technology. It should also include the development of all technologies that can promote agricultural development. It can be divided into three levels:

(1) Technology development

Refers to all development and research activities before large-scale production of products. The results of applied research and related technologies will be used for the selection and breeding of new varieties, new products, new technologies, new processes, and new materials, and the development or introduction of digestion and utilization; the improvement and improvement of existing varieties, products, and technologies;) Research on technological processes, technical regulations, product technical standards, etc. of large-scale production in the industry; regional tests for the assembly of single results or multiple results. Production trials and large-scale demonstrations; large-scale instruments and equipment, scientific new technologies, and new products in agricultural development and utilization research. Through agricultural technology development and research, obtain practical research results, such as new varieties, new products, etc., and further improve, improve and improve their technology and process, clarify the applicable conditions and scope of technology or technical products, and improve technology And technical product reliability and feasibility.

(2) Product development

The large-scale production of new varieties, new products and new materials with mature technology will be formed into products that can be put on the market or further processed further. The secondary development of the products will develop new products with higher technological content.

(3) Market development

The technology products that have formed production capacity shall be market-developed, and technology management and commodity management shall be carried out. It is necessary to continuously carry out market forecasting, product promotion, establish product quality testing procedures, carry out various technical consultations, technical services, technical training and

perfect sales services, so that technological products enter the market, expand the market, and occupy the market.

3. Experiments

3.1. Selecting Sample A Province's Social and Economic Development Status

Province A has a population of more than 36 million, of which the rural population is more than 19.5 million, and farmers account for 54.17% of the province's population. Due to social history and national policies, rural education and health care in Province A lags behind, and the quality of farmers is low, which seriously affects the economic growth of agriculture and the development of modern agriculture. At present, the large rural population, insufficient investment in education funds, and low investment in agricultural human capital restrict the further development of A's rural economy and the establishment of a modern agricultural system. The ability to invest in agricultural human capital in the future is the key to whether A's rural areas can get rid of poverty and embark on the road to prosperity. It is also a major issue whether the modern agricultural system can be established and agricultural modernization can be successfully achieved. Therefore, increasing the investment in agricultural human capital has become an important challenge for A's agriculture to achieve a new leap and modernization process.

3.2. Variable Selection and Data Collection

(1) Agricultural output variables

Considering the availability of data and the accuracy and convenience of the study, this study uses the agricultural concept in the sense of statistical caliber, which mainly refers to agriculture, forestry, animal husbandry, and fishery. The agricultural output variable uses the agricultural output value with constant price in 2010. The data of agricultural output value and GDP index from 2010 to 2019 are derived from "A Province Statistical Yearbook 2010-2019".

(2) Variables of agricultural material input

This study uses the perpetual inventory method to calculate the agricultural material capital stock of Province A as of 2019. The investment amount for that year is selected from the total agricultural fixed capital formation. The data for 2010-2019 are derived from "China's GDP historical accounting data 2010-2013". Data from 2013 onwards use agricultural fixed asset investment to account for the total social fixed asset investment. The ratio is multiplied by the total fixed capital formation of the whole society to make up, and the price index of agricultural production materials is used to deflate the investment in each year, which will be converted into a constant price in 2010.

When using the perpetual inventory method to estimate the capital stock, the capital stock in the base period is the factor that has the least impact on the estimation process. The earlier the base period is selected, the smaller the impact of the base period stock on the subsequent capital stock as the annual depreciation progresses and the investment increases year by year. In this study, in determining the agricultural base capital of Province A, the estimated value of Li Gucheng and others was directly used at 3.564 billion Yuan, and it was converted into the price in 2010 through the price index. The result was 7.420 billion Yuan.

(3) Variables of agricultural manpower input

After comprehensively comparing several methods of measuring human capital stock, this study chose to use the perpetual inventory method in the cost method to estimate the human capital stock of Province A from 2010 to 2019. As with physical capital stock accounting, this method of calculating human capital stock mainly involves the selection of four key variables, namely human capital stock in the base period, various human capital investments, human capital depreciation rate,

and human capital price index.

Hou Fengyun and others assumed that the age of 1 to 44 is the growth period of human capital, after 45 years of age is the absolute depreciation period of human capital, and the human capital stock drops to 0 when the age of 65 is reached. Therefore, using 44a of human capital formation years divided by 21a of human capital depreciation years, the average annual amount of human capital depreciation is 2.095a, and then divided by the depreciation years of 21a, the final human capital depreciation rate is 9.98%. Taking into account the basic principles of the perpetual inventory method and the need for the comparability and consistency of human capital and physical capital estimates, Qian Xueya divided human capital into two categories, general and professional knowledge and ability, according to the mode of decreasing geometric efficiency. It is determined that the depreciation rate of the two is 3.66% and 7.19%, and then the human capital depreciation rate is 5.14% according to the weighted average of the investment proportion structure of the two. Jiao Binlong et al. Borrowed the straight-line depreciation method in accounting and thought that different forms of human capital should have different depreciation rates. Assume that the human capital stock is depreciated after receiving human capital investment, and exits the labor market at the age of 60. At this time, the human capital stock is depreciated to zero. Then, the depreciation rate of human capital = $1 / \text{average life of human capital}$, and the average life of human capital = $60 - \text{average time of human capital investment}$. According to Jiao Binlong's ideas, this study calculated two types of human capital depreciation rates. The first is education, culture and entertainment depreciation rates. Consult the "China Rural Statistical Yearbook" and "China Population and Employment Statistical Yearbook" to get the education of rural residents in province A; and then according to the settings of primary education 6a, junior high 9a, high school 12a, college and above 16a, get province A The average years of schooling during this period is about 7a. As Chinese residents generally start their education at the age of seven and enter the labor market after completion, human capital begins to depreciate. In this way, the use time of human capital investment is 14a, and the average life of human capital is 46a. Therefore, the depreciation rate of human capital in education, culture and entertainment is 2.17%. Unlike human capital in education, human capital in healthcare is an investment that runs through the entire career of the workforce, and there is no clear time to complete the investment. Assume that a person's physical fitness begins to decline from the age of 30, and that he or she completely withdraws from the labor market by the age of 60. The depreciation period of human capital in health care is 30a and the depreciation rate is 3.33%.

(4) Human Capital Price Index

In economics research, in order to avoid the impact of price fluctuations on economic data, it is usually necessary to exclude price changes. In terms of human capital estimation, Lisheng Shen chose the consumer price index; Qian Xueya and others used basic data such as the fixed asset investment price index and the general consumer price index and category index to construct a human capital investment price index; Jiao Binlong and others Then the GDP deflator is selected as the human capital investment price index. Considering that the investment of human capital is selected from the expenditure of education, culture and entertainment, and health care among rural residents, this study uses the rural consumer price index as the human capital investment price index to deflate human capital investment.

4. Discussion

4.1. Regression Analysis of Sample A Province Data

Through the above variable description and data processing, we obtained the agricultural input-output data of Province A from 2009 to 2019, imported it into Eviews software, and

performed OLS regression. The model results are shown in Table 1.

Table 1. Eviews estimation results

Variable	Coefficient	t-Statistic
C	0.720518	16.524961
ln(K / L)	0.212269	3.917071
ln(H / L)	0.461100	13.89707
R-squared	0.989696	-

From the OLS estimation results in Table 1, it can be seen that $R^2 = 0.9897$, indicating that the equation fits well; and all the variable coefficients and models have passed the t test at the significance level of 1%, indicating that the material capital per capita in the equation Per capita human capital has a strong ability to explain per capita output.

4.2. Data Induction Conclusion

From the current situation of agricultural human capital in Province A, there are the following characteristics:

- (1) Analysis of the proportion of personnel engaged in the primary industry
The proportion of people engaged in the first industry is shown in Figure 1.

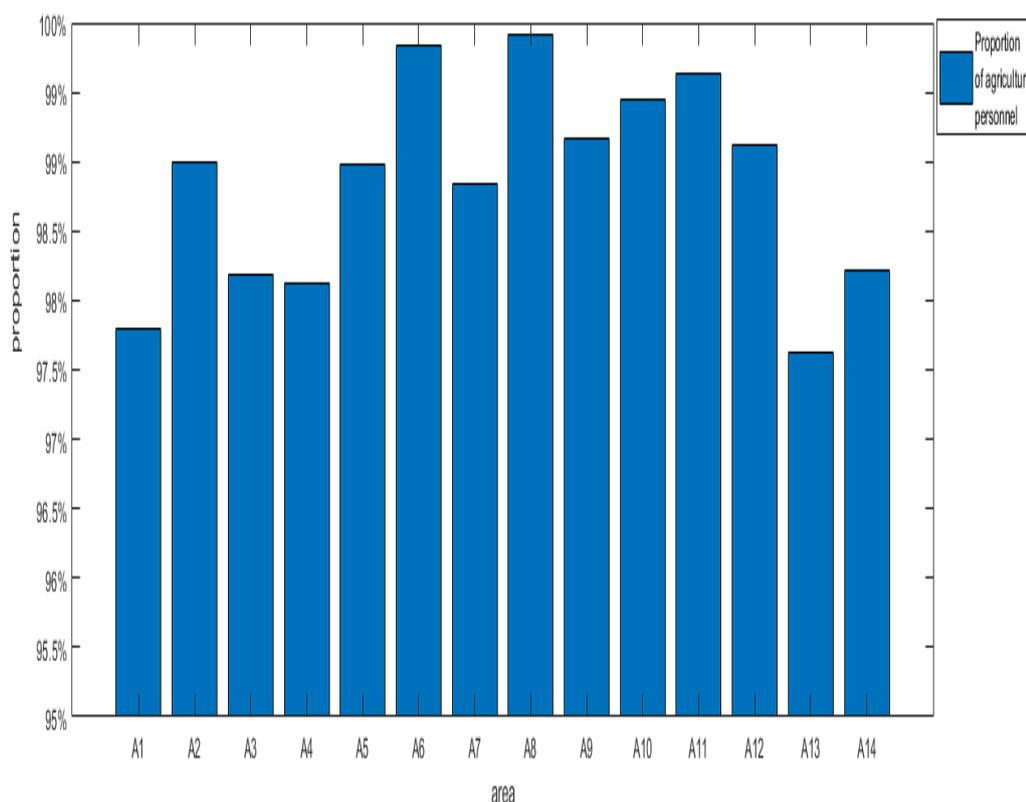


Figure 1. Proportion of agriculture, forestry, animal husbandry and fishery in total rural labor force

It can be seen from Figure 1 that the proportion of people engaged in the primary industry is high, and the proportion of agricultural, forestry, animal husbandry, and fishery laborers in A's total rural labor force is 98.85%, indicating that most of the rural labor force is still engaged in agricultural production.

(2) Analysis of the proportion of agricultural professional and technical personnel in the labor force of agriculture, forestry, animal husbandry and fishery

The skills of agricultural workers include general knowledge about planting crops, field management of crops, and disease management capabilities. If the proportion of agricultural professionals and technicians in the agricultural, forestry, animal husbandry and fishery labor force is relatively low, it means that the workers engaged in agricultural production have lower basic skills, and the lower basic skills reflect the workers' poor ability to accept and understand agricultural scientific and technological knowledge, affecting agricultural science and technology. The mastery and application of knowledge, the analysis of the proportion of agricultural professional and technical personnel in the agricultural, forestry, animal husbandry and fishery labor force is shown in Figure 2.

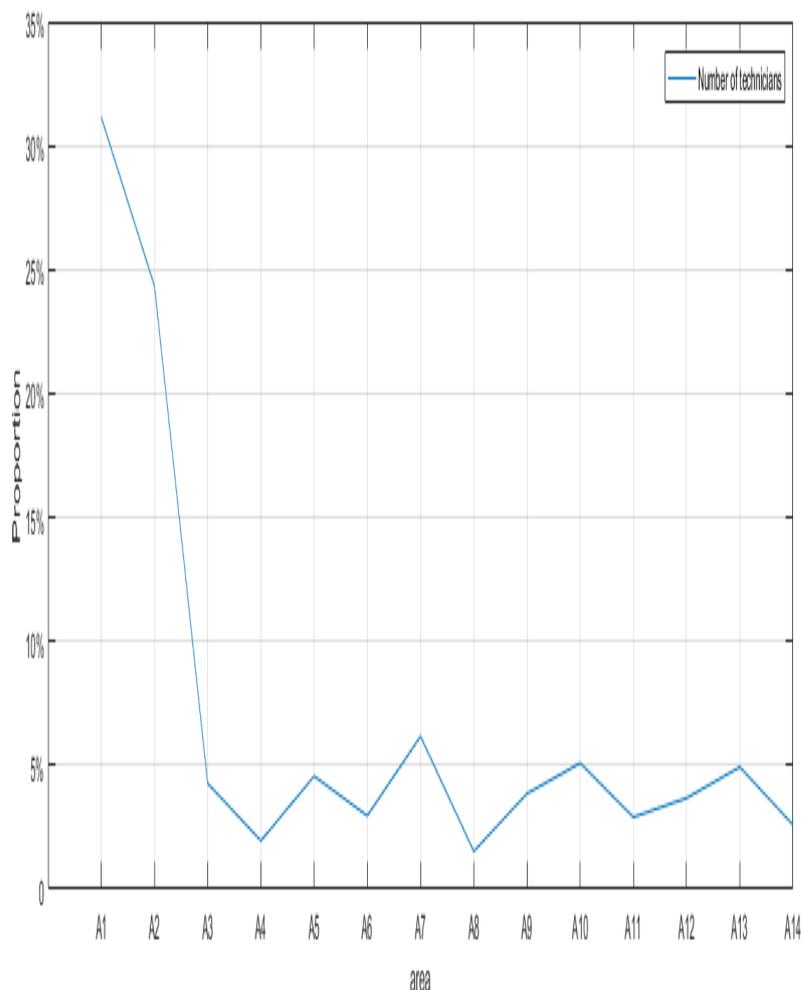


Figure 2. Number of technicians per 100 agricultural employees

It can be seen from Figure 2 that the proportion of agricultural professional and technical personnel in the agricultural, forestry, animal husbandry and fishery labor force is relatively low. It

can be seen from the census data that the proportion of agricultural professional and technical personnel in A's agricultural, forestry, animal husbandry and fishery labor is 7.14%, which indicates that the overall technical level of agricultural employees is low. In terms of regional distribution, the gap between the 14 prefectures and prefectures in Province A is large. The number of technicians in A1 and A2 cities is far ahead of other regions; accounting for 31.14% and 24.33% of the total number of Province A, while A3, A4, and A5 cities. The proportion is relatively low. Judging from the number of technical personnel per 100 people in Figure 2, A1 leads the way in this indicator, with an average of 25.69 technical personnel per 100 agricultural workers, which is clearly ahead of other regions. In general, the agricultural technicians in Province A are quite lacking, and it is necessary to accelerate the cultivation of agricultural technicians in Province A.

(3) Analysis of the proportion of high-quality agricultural technicians

The proportion of highly qualified agricultural technicians is shown in Figure 3.

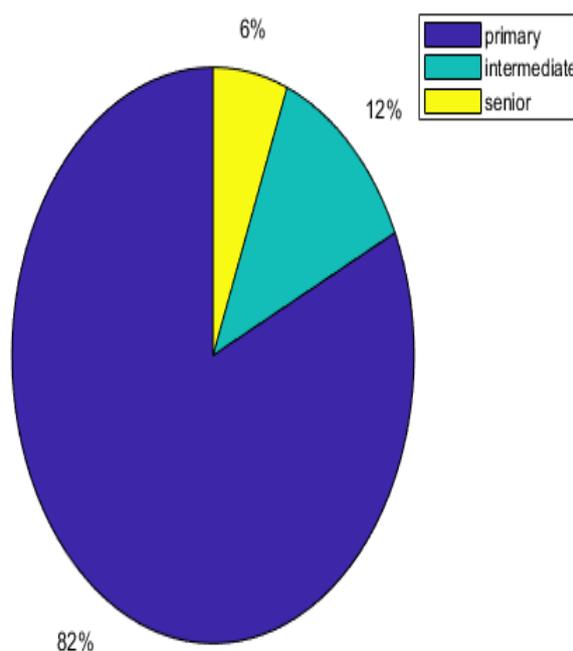


Figure 3. Composition of agricultural technicians

It can be seen from Figure 3 that the proportion of high-quality agricultural technicians is small. Among the agricultural technicians in the industrial activity units of Province A, the proportion of junior technicians is the largest, which is 82%, and intermediate and senior are 12% and 6%, respectively. The structure of technical personnel is obviously unreasonable. In the future, it is necessary to further strengthen the training of agricultural technicians, increase the proportion of senior and intermediate technicians, and lay the foundation of human resources for the development of modern agriculture.

(4) Analysis of basic education level of agricultural workers

The basic education level of agricultural workers is shown in Figure 4. The basic education level of agricultural workers is shown in Figure 4.

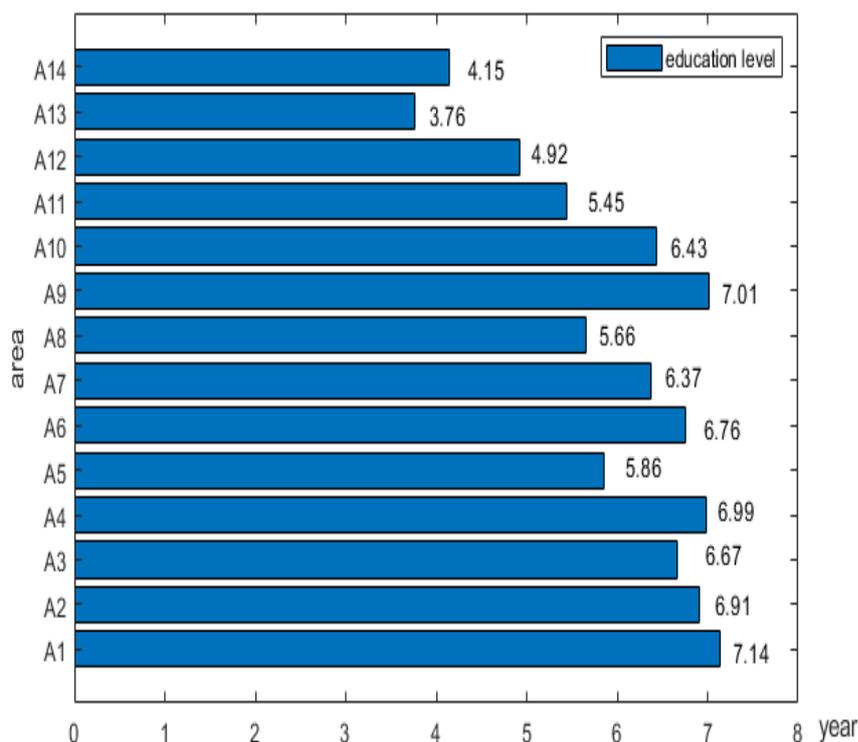


Figure 4. The average education course of agricultural labor force

Note: The average education level of the agricultural labor force = (the number of primary school * 6 + the number of middle school * 9 + the number of high school * 12 + the number of college and above * 15) / the total number of agricultural labor force

As shown in Figure 4, the basic education level of agricultural workers is relatively low. The basic cultural education level of agricultural workers refers to the degree to which agricultural workers receive ordinary compulsory education. It determines and influences the improvement of other qualities of agricultural workers. From an international perspective, more than 7% of agricultural workers in France have a college diploma, and 60% of young agricultural workers have a technical secondary school level. In Germany, 7% of agricultural workers have a university diploma, and 53% of agricultural workers receive 2-3 years of vocational training. Among Japanese agricultural workers, 5.9% graduated from college, 74.8% graduated from high school, and 19.4% graduated from junior high school. On the whole, agricultural workers' overall agricultural skills are relatively low. Therefore, it is very difficult to improve the scientific and technological level of agricultural workers and agricultural skills, and rural compulsory education in Province A needs to be further strengthened.

5. Conclusion

Agriculture is the foundation of the national economy. The backward human resources development in the western region is the key factor that causes the gap between the human resources in the east and the west. This paper raises the research of agricultural human capital potential in the western region. Using the practical experience, the Solow residual method is used to regression analysis the data of Province A.

The research results in this paper show that the primary factor affecting the growth of agricultural technology in Province A is human capital, followed by physical capital, and finally labor input. The key to the sustainable development of agricultural technology in the western region is to release various potentials of human capital, and various investments in human resources are the core of the potential release of human capital. An important form of this investment is education and various trainings, which need to focus on basic education. Therefore, the western region should continue to prioritize basic education, raise funds from multiple sources, improve school conditions, and strive to enable the vast majority of children of appropriate age to receive a more comprehensive basic education. Strengthen the management of agricultural human capital. Human capital management is to effectively plan, organize, and control human capital through a certain organizational form, thereby laying the foundation for the effective use of human capital. The management of agricultural human capital must not only focus on economic benefits, but also on social benefits. We must pay attention not only to macroeconomic benefits but also to microeconomic benefits. Strengthening macro and micro management of agricultural human capital is another important way to release and improve agricultural technology.

This article believes that governments at all levels should increase their investment in human capital from a strategic perspective and ensure that the proportion of such investment in the government budget of this level continues to increase. Through the horizontal integration of scientific research institutions, enterprises are Providing funds, on the one hand, also provides a shortcut for the transformation of scientific research results; formulating more preferential policies to attract foreign investment in human resources development; and joint education and retraining through individual and unit investment to improve the overall quality of agricultural human resources The purpose is to obtain a higher return on investment. Finally, clarifying the potential of agricultural human capital in the western region and correctly increasing the agricultural human capital in the western region is crucial to the development of agricultural technology in the western region.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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