

Analysis of the Development Path of Chinese Rural Characteristic Industries and Its Impact on Farmers' Income

—The Case of agriculture Industry in Zhejiang Province

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ABSTRACT

Promoting the growth of farmers' income is the central task of the work of the "three rural areas", and the development of rural specialty industries provides a new way of thinking. In this paper, we conduct semi-structured interviews and multi-stage questionnaire surveys with unequal probability sampling on farmers and workers engaged in agriculture industry in 109 administrative villages in 6 cities of Zhejiang Province, study the development path of rural specialty industries and its effect on farmers' income, and put forward five policy recommendations.

KEYWORDS

Rural characteristic industry; Farmers' income; Development path

1. INTRODUCTION

Agriculture and rural farmers is a fundamental issue related to the national economy and people's livelihood, 2024 Central Document No. 1 pointed out that we should "encourage local conditions to vigorously develop characteristic industries, support the creation of local characteristics of the brand". Zhejiang in the provincial party committee in the first document out of the development program in Zhejiang, proposed to promote the countryside "native, special, production" first development. As the birthplace of the national silk industry and an important cocoon producing areas, in the "14th Five-Year Plan" period issued "on accelerating the high-quality development of agriculture industry guidance", for the agriculture industry to improve the quality and efficiency of the direction. It can be seen that the construction and development of rural special industries can promote the sustainable development of the overall economy of rural areas, improve the per capita income of farmers, and accelerate the modernization process of rural areas.

In view of this, this paper is based on the research data of farmers in six cities in Zhejiang Province, constructing multiple linear regression model and structural equation model, conducting gray correlation analysis, studying the development path of agriculture industry and the impact of farmers' income, in order to provide decision-making reference for promoting the income of farmers in various regions.

2. LITERATURE REVIEW

At present, the domestic research on the relationship between agriculture industry and farmers' income lacks the practical test of the path mechanism, and many scholars indirectly propose that the agriculture industry has a promoting effect on the growth of farmers' income by studying the impact

of the current status of regional agriculture industrialization on the development of the local economy. Niu Jingcheng (2009) established a link between farmers' income and the agriculture industry, introduced and analyzed the current problems in the development of agriculture industry in Dasheng Town, Anqiu City, and put forward corresponding countermeasures. Yan Guisong (2022) takes the role of agriculture industry in the development of rural collective economy as the entry point, and puts forward the suggestion of accelerating the development of agriculture industry in Yerjie Town on the basis of analyzing the current situation of agriculture industry development in Yerjie Town.

Ericulture has a long history and is widely practiced throughout the world. Among them, the development of sericulture industry in Japan and India has become a typical representative. In order to vigorously promote the development of the sericulture industry, Japan reformed and innovated the form of industrial organization (Ssemugenze B, 2021). With the continuous development of society and economy, the initial small organizations gradually evolved into large organizations, such as the National Federation of Silkworm Agricultural Cooperative Associations and the Central Silkworm Association (Ma Debin, 2004). India adopted an integrated management model that combined the sericulture industry with other related industries, and the Central Silk Board was established to provide comprehensive and effective planning and management of the country's sericulture industry (Gangopadhyay D, 2008).

3. THEORETICAL MECHANISMS AND RESEARCH HYPOTHESIS

3.1. Theoretical Hypothesis on the Impact of Sericulture Industry Development on Farmers' Income

On the basis of the above research on the impact effect of sericulture industry development, scholars' studies have mostly focused on the relationship between sericulture industry development and rural revitalization, while there are fewer empirical studies on the relationship between sericulture industry development and farmers' income.

Farmers' income satisfaction is the relative relationship between farmers' expectations of family income and their actual psychological feelings after obtaining labor income from production and operation, which is the sum of people's feelings about various factors such as physiology, psychology and environment (Zhang Li, 2017). The current academic research on the path of the relationship between sericulture industry and farmers' income lacks practical tests, but there are many scholars who study the status quo of regional sericulture industrialization, and indirectly put forward the role of sericulture industry in promoting the growth of farmers' income. As one of the traditional pillar industries in Huzhou, the development of sericulture industry can provide more opportunities for employment and increase farmers' income, as well as promote the diversification of rural economy and improve the quality of life of farmers. The group thus formulates the following hypotheses.

H1: The level of sericulture industry development has a positive effect on farmers' income satisfaction.

Scale effect, also known as economies of scale, refers to when the scale of production of an enterprise reaches a certain level, due to the organic combination of various factors of production produces a $1+1>2$ effect, the average cost shows a downward trend. Huzhou sericulture industry development in the early stage to individual households, income dispersion, and then in the economic development and government organizations under the dual role of the beginning of large-scale operation, the family's sericulture unified farming, selling, with greater profit margins and industrial orders, the formation of brand effect. Sericulture industry production scale expansion, can produce more sericulture, can be sold in a larger range of areas, sericulture sales gradually rise, the farmers' income also increased. The group thus puts forward the following hypotheses.

H2: sericulture industry scale has a positive impact on farmers' income satisfaction.

3.2. Sericulture Industry Development Path Theory Hypothesis

Important factors such as government support, science and technology, knowledge dissemination, market economy and production organization methods have a significant impact on farmers' income.

Market economy is an economy in which the market determines the allocation of resources. From the point of view of the development of human society, the market economy is by far the most efficient way of allocating resources (Li Minsheng, 2018). The Feasibility Report on China Silk Market Development Analysis and Future Investment Potential, 2022-2028, states that with the industry's strengthening of the comprehensive utilization of sericulture cocoon and silk resources, it has promoted the diversified development of sericulture resources and the emergence of high-value-added products, and enhanced the level of industrial development. Given the extensive market demand in Huzhou City, the development of its sericulture industry is inevitable. Accordingly, the group puts forward the following hypotheses.

H1a: Market economy conditions have a positive effect on the level of sericulture industry development.

In the sericulture industry in Huzhou, the degree of knowledge of farmers and practitioners related to sericulture and sericulture will directly affect the level of development of the industry. Lu Hong et al. (2024) argued that once production encounters production risks such as incomplete sterilization of sericultural equipment in the sericulture room and ineffective sericulture disease prevention, economic income will be directly affected. In addition, by external factors leading to pesticide poisoning of silkworms or on the nest does not cocoon phenomenon also occurs from time to time, silkworm poisoning seriously affects the cocoon yield and quality, reduce production and income, greatly frustrated the majority of sericulturists planting mulberry sericulture enthusiasm, sericulture production development and growth of the potential pitfalls. It is easy to see that people with a high degree of knowledge of sericulture are more likely to use advanced technology and management methods, constantly innovate the production mode and technical means, and promote the sericulture industry towards a more modern and efficient direction. The group puts forward the following hypotheses.

H1b: Knowledge acquisition has a positive impact on the development level of sericulture industry.

Academician Xiang Zhonghuai believes that improving the level of sericulture scientific research is the support of sericulture industry development. The application of sericulture science and technology can improve the efficiency and smoothness of the sericulture process, and through scientific seed selection, rational fertilization, scientific disease prevention and pest control and other technical means, it can guarantee the quantity and quality of silkworms and improve the overall production efficiency. Huzhou, Zhejiang Province, through the modernization of the assembly line for robotic sericulture, the traditional mulberry-based fish ponds to inject new momentum. It is understood that mechanized sericulture can reduce labor costs and increase efficiency by about 50%-60%. In the Mulberry-based fish ponds in Shotong Village, Linghu Township, sericulturists from family farms are also feeding silkworm babies on plaques running automatically. The farms, by exploring the mode of sericulture, provide sericulturists with the whole process of sericulture pre-production, mid-production, and post-production services, realizing the time-saving and efficiency gains, and driving farmers to become rich and increase their incomes. The group thus puts forward the following hypotheses.

H1c: The level of science and technology has a positive effect on the level of development of sericulture industry.

Since the "Belt and Road" initiative was put forward in 2013, Huzhou City sericulture industry sector to actively introduce supportive policies, the formation of silkworm seed export enterprises, breeding a number of advanced technology enterprises with excellent varieties of production. Huzhou City sericulture industry departments adhere to the "sericulture seed industry 'go out'" as the sericulture

industry to enhance the development of new ways to encourage silkworm seed export enterprises to participate in the “Belt and Road”, enhance the “baby” brand silkworm seedling brand international influence, help Huzhou sericulture industry high-quality development. The landing of the project can drive more people to work at home, so that they can increase their income, and further promote the revitalization of the countryside.” The group thus puts forward the following hypothesis.

H1d: The level of government support has a positive effect on the level of sericulture industry development.

The general law of market economies is that the market determines the allocation of resources. Market economies are essentially economies in which the market determines the allocation of resources. A market economy under socialist conditions must follow the general laws of market economies, and no industry is exempt (Zhao Feng 2017). Under the conditions of a socialist market economy, people can freely buy and sell goods in the market. Under the socialist economic system, which regulates prices in the market, farmers seek to maximize their profits by choosing economies of scale, integrating individual households into regional agglomerations, expanding the scale of the industry, and ultimately increasing the income of farmers. This group therefore proposes the following hypothesis:

H2a: Market economy conditions have a positive impact on the scale of the sericulture industry.

Zhejiang, the birthplace of the sericulture industry, the government attaches great importance to the local development of the sericulture industry. In the “Several Opinions on Promoting the Development of the Sericulture Industry in Huzhou City,” it is pointed out that the government will actively explore large-scale simplified breeding in the form of project support. Government support is an accelerant for the gradual expansion of the sericulture industry scale, allowing more sericulturists to put aside their concerns and invest in the sericulture business, helping to expand the scale of the sericulture industry. This group therefore proposes the following hypothesis:

H2b: Government support has a positive impact on the scale of the sericulture industry.

As can be seen from the previous analysis, the mode of production organization affects the production efficiency of the industry. Choosing the right mode of production organization can greatly improve production efficiency. The ultimate goal of economies of scale is also to increase product sales. The sericulture industry chooses group production, which, in the case of mass production, forms a scale of production, manufacturing, and sales. The benefits of the two superimposed are greater than the impact of one method. Group production in the sericulture industry divides the steps of sericulture farming, with dedicated personnel managing the corresponding processes, to avoid problems such as process disruption and difficulty determining responsibility. This simplifies, professionalises and standardises the complex production of small batches of individual items, and countless groups form the scale of sericulture farming. This group therefore proposes the following hypothesis:

H2c: The production organization methods has a positive impact on the scale of the sericulture industry.

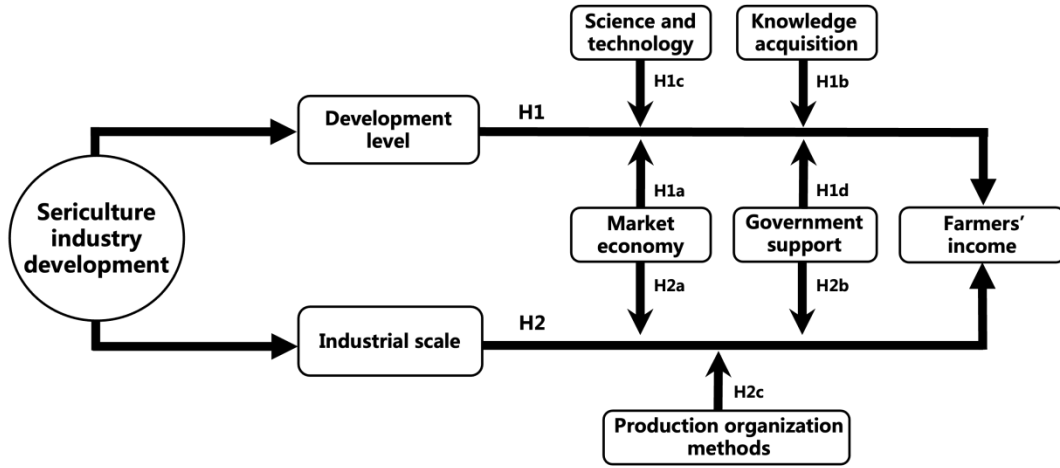


Figure 1. Hypothetical route map

4. MODEL, VARIABLES AND DATA

4.1. Sample Selection and Data Collection

The data in this article comes from a questionnaire survey conducted by the research team in Huzhou City, Zhejiang Province, from March to June 2024. The open data of “Information on Mulberry Area and Cocoon Production by Township” in Huzhou City is used to measure the development of the sericulture industry in each township, and the specific criteria are as follows (all in years):

- (1) Total cocoon production: 15 tons and above;
- (2) Total mulberry area: 200 mu and above;
- (3) Total number of silkworm eggs raised: 500 and above.

According to this standard, among the 2 districts and 3 counties under the jurisdiction of Huzhou City, more than 40 townships meet the standards and belong to the developed sericulture industry area. Combining with the total list of “Provincial Beautiful and Livable Model Villages” and “Provincial Traditional Villages” announced by Huzhou City, this article defines the scope of the survey as 30 townships and 109 administrative villages, and the survey targets are farmers and employees engaged in sericulture breeding in the sericulture industry villages of Huzhou City.

This survey adopted a method combining stratified sampling with multi-stage non-rigorous sampling. In each of the five districts mentioned above, six sample towns were randomly selected, and 20-25 natural villages were randomly selected in each sample township. A total of 1,756 questionnaires were distributed, and 1,584 valid questionnaires were recovered, for an effective rate of 90.21%.

4.2. Model Setting

From the definition of the formula, $i=1$, let X_i denote the independent variable of the influencing factor, Y denote the satisfaction of farmers' income, and β_i denote the coefficient of the linear relationship between different independent variables and the dependent variable. Thus, the overall linear correlation between farmers' satisfaction with their income and other variables can be obtained. The formula is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \alpha \quad (1)$$

After analysis, we believe that market economy conditions, knowledge acquisition, the level of science and technology, and government support are the four factors that have the greatest impact on the development level of the sericulture industry. Let Z_i represent the independent variable that

affects the factor, and let X_1 represent the development level of the sericulture industry. From this, we can obtain the overall linear correlation between the development level of the sericulture industry and other variables.

$$X_1 = \alpha_0 + \alpha_1 Z_1 + \alpha_2 Z_2 + \alpha_3 Z_3 + \alpha_4 Z_4 + t \quad (2)$$

Market economy conditions, government support, and production organization methods are the three factors that have the greatest impact on the development level of the sericulture industry. The independent variable K_i represents the influencing factors, and the dependent variable X_2 represents the scale of the sericulture industry. This shows the overall linear correlation between the scale of the sericulture industry and other variables.

$$X_2 = \gamma_0 + \gamma_1 K_1 + \gamma_2 K_2 + \gamma_3 K_3 + \alpha \quad (3)$$

In the structural equation model, formula (4) is the structural model part, which specifies the causal relationships between the variables of the hypothetical market economy conditions and the level of science and technology in the research model and the level of development and the scale of industry. B represents the matrix of effect coefficients of variables such as market economy conditions and level of science and technology on variables such as the level of development and the scale of industry, Γ represents the matrix of effect coefficients of variables such as market economy conditions and the level of science and technology on implicit endogenous variables, and ζ represents the vector consisting of residual terms.

Equations (5) and (6) are the measurement model parts, which respectively stipulate the relationship between variables η such as market economy conditions, the level of science and technology and variables y such as the level of development and the scale of industry, as well as the relationship between variables such as market economy conditions, the level of science and technology and variables such as the level of development and the scale of industry; Λ_y and Λ_x respectively represent the regression coefficients or factor load matrices for variables η and ξ such as market economy conditions and technological level; and respectively represent the measurement errors for variables such as market economic conditions and technological level. The expressions are as follows:

$$\eta = B\eta + \Gamma\xi + \zeta \quad (4)$$

$$y = \Lambda_y \eta + \varepsilon \quad (5)$$

$$x = \Lambda_x \xi + \delta \quad (6)$$

4.3. Variable Selection

Explained variable: This article interprets the explained variable as farmers' income, which is measured by rural residents' disposable income and mainly includes four components: salary income, net income from family operations, net income from property, and net transfer income.

Core explanatory variables: The core explanatory variables in this paper are the level of development and the scale of the industry. The level of development is mainly measured by indicators such as development trends, labor force, degree of economic development, and employee engagement intentions. The scale of the industry is mainly measured by indicators such as the number of operating organizations, annual output, demand, competitiveness level, and capital investment.

Moderating variables: The intermediate variables in this paper are market economy conditions, knowledge acquisition, the level of science and technology, government support, and production organization methods. Among them, market economy conditions, government support, the level of science and technology, and knowledge acquisition are the regulating variables of the impact of

development level on farmers' income. Market economy conditions, government support, and production organization methods are the regulating variables of the impact of industrial scale on farmers' income.

Control variables: This paper selects the farmer's gender, age, marital status, education level, and labor force population as control variables.

4.4. Descriptive Statistics

After screening out invalid questionnaires and excluding specific topics, the team collected 1,584 questionnaires. The analysis shows that among all respondents, 49.31% are male and 50.69% are female, which is roughly similar to the male-to-female ratio of the national population, indicating that the team effectively avoided the gathering of a single gender group during the survey, thereby reducing the impact of gender on the data.

In terms of the age structure of the respondents, the group aged 41 and above accounted for a high proportion of 77.01%, among which the number of people aged 41-50 and 51-60 accounted for the highest proportions, 30.74% and 23.61% respectively. This is consistent with the characteristics of rural residents initially set by the team and is representative to a certain extent.

In terms of marital status, married people accounted for as high as 81.31%, which is in line with the "head of household" status requirement of this group's survey, making the questionnaire data more representative of rural households.

In terms of education level, 39.27% of the respondents had an education level below junior high school. During the process of explaining the questionnaire, the vast majority of respondents were able to understand and answer the questionnaire questions, which proves the validity and rationality of the data from this survey.

In terms of the labor force, most family sizes are concentrated between 2 and 4 people, which is roughly in line with the national average family size, further demonstrating the validity of this survey. In summary, the above demographic characteristics indicate that the sample obtained by this group is well represented.

5. RESULTS

5.1. Reliability Analysis

As can be seen from Table 1, the Cronbach's Alpha of the questionnaire for the six dimensions of the development level of the sericulture industry, the scale of the sericulture industry, and market economic conditions is greater than 0.8; the Cronbach's Alpha of the two dimensions of the degree of knowledge of sericulture and the mode of production organization is between 0.7 and 0.8. This indicates that the questionnaire has good stability and reliability.

Table 1. Cronbach's Alpha

Dimension	Cronbach's Alpha	Item count
Level of development	0.883	8
Scale of industry	0.812	6
Market economy conditions	0.824	4
Knowledge acquisition	0.796	5
Level of science and technology	0.835	5
Government support	0.842	3
Production organization methods	0.769	6
Farmers' income satisfaction	0.841	7

5.2. Validity Analysis

Table 2 shows that the KMO value is 0.805 and the significance of Bartlett's sphericity is less than 0.05. Therefore, the questionnaire items are suitable for factor analysis.

Table 2. Results of KMO and Bartlett's test of sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.805
Bartlett's Test of Sphericity	Approximate Chi-Square	21.715
	Degrees of Freedom	21
	Significance	0.016

5.3. Analysis of Multiple Linear Regression Results

5.3.1. An empirical test of the impact of the development of the sericulture industry on farmers' income

As shown in Table 3, The satisfaction of farmers' income is taken as the dependent variable, and the development level and scale of the sericulture industry are taken as the independent variables for linear analysis. The results are shown in Table 3.

The two dimensions of the sericulture industry are positively correlated with farmers' income satisfaction, while the development level and scale of the sericulture industry are negatively correlated, indicating that the development status of the sericulture industry can be reflected from two dimensions with different focuses, namely the development level and scale of the sericulture industry, which can better reveal the relationship between the development of the sericulture industry and farmers' satisfaction.

Table 3. Correlation of factors influencing farmers' income satisfaction

		Farmer's income satisfaction	Development level	Development scale
Pearson correlation	Farmer's income satisfaction	1.000	.388	.501
	Level of development	.388	1.000	-.037
	Scale of industry	.501	-.037	1.000
Significance (single tail)	Farmer's income satisfaction	.	.000	.000
	Level of development	.000	.	.351
	Scale of industry	.000	.351	.

Furthermore, this paper adds the farmer's education level and family size as control variables to the baseline model for multiple linear regression. The regression results are shown in Tables 5-7. Among them, the estimated coefficients of sericulture industry development level and sericulture industry scale are 0.407 and 0.516, respectively, both of which are significant at the 1% statistical level, indicating that there is a significant positive correlation between the development conditions of the sericulture industry and farmers' income satisfaction.

Table 4. Coefficient table of influencing factors of farmers' income satisfaction

Model		B	Standard error	Beta	t	Significance	
(constant)		0.028	0.413		0.067	0.004	
independent variable	Level of development	0.41	0.075	0.407	5.485	0	
	Scale of industry	0.573	0.082	0.516	6.952	0	
control variable	education level	No education	0				
		Primary school	0.103	0.029	0.060	3.534	0.000
		Middle school	0.122	0.022	0.007	0.562	0.575
		High school	0.021	0.016	0.002	0.328	0.743
		College	-0.277	0.29	-0.37	1.656	0.002
	Bachelor's degree or above	-0.432	0.311	-0.562	2.954	0.437	
	Number of family laborers	1	0				
		2	0.004	0.027	0.002	0.149	0.882
		3	0.011	0.024	0.005	0.445	0.657
		4	-0.031	0.022	-0.02	-1.046	0.161
>=5		-0.04	0.035	-0.018	-1.129	0.261	

5.3.2. Empirical test of sericulture industry development path

As can be seen in Table 5, the coefficients of market economic conditions, knowledge acquisition, the level of science and technology, and government support are all significantly greater than 0, indicating that they are all positively correlated with the development level of the sericulture industry.

Table 5. Sericulture industry development level linear regression coefficient table

Model		B	standard error	Beta	t	significance
1	(constant)	4.050	.681		5.950	.000
	Market economy conditions	.043	.095	.045	.459	.0047
	Government support	.193	.086	.058	1.046	.0007
	Knowledge acquisition	.161	.103	.157	-1.569	.0012
	Level of science and technology	.045	.090	.049	-.499	.00619

As can be seen in Table 6, the coefficients of market economic conditions, government support, and production organization methods are all significantly greater than 0, and they are all positively correlated with the scale of the sericulture industry.

Table 6. Sericulture industry scale linear regression coefficient table

Model		B	Standard error	Beta	t	Significance
1	(constant)	4.600	.549		8.375	.000
	Market economy conditions	.108	.086	.123	1.255	.0041
	Government support	.138	.100	.132	-1.372	.0017
	Production organization	1.124	.092	3.026	.262	.001

5.4. Analysis of Interaction Relationship Based on Structural Equation Model

The standardized path coefficients of this article "The impact of the development of sericulture industry on farmers' income" are shown in Table 7. It can be seen that the standardized path coefficient of the development level of the sericulture industry on farmers' income satisfaction is 0.079, the standardized path coefficient of the scale of the sericulture industry on farmers' income

satisfaction is 0.082, the standardized path coefficient of market economic conditions on the development level is 0.008, the standardized path coefficient of knowledge mastery on the development level is 0.026, the standardized path coefficient of the level of science and technology to the development level is 0.035, the standardized path coefficient of government support to the development level is 0.01, and the standardized path coefficient of production organization methods to farmers' income satisfaction is 0.066.

Table 7. Model regression coefficient table

Path			coefficient	standard error	P
Farmers' income satisfaction	←	Level of development	0.079	0.023	***
Farmers' income satisfaction	←	Scale of industry	0.082	0.020	***
Level of development	←	Market economy conditions	0.008	0.032	*
Scale of industry	←	Market economy conditions	0.021	0.024	**
Level of development	←	Knowledge acquisition	0.026	0.021	**
Level of development	←	Level of science and technology	0.035	0.023	**
Level of development	←	Government support	0.010	0.028	*
Scale of industry	←	Government support	0.034	0.027	**
Scale of industry	←	Production organization	0.009	0.038	*

This group used structural equation modeling to analyze the relationship between development level, industry scale, market economic conditions, knowledge acquisition, level of science and technology, government support, production organization methods and farmers' income satisfaction. It can be seen that the direct effect coefficients of development level and industry scale on farmers' income satisfaction are 0.079 and 0.082 respectively, which are significant at the 1% level, indicating that industrial development has a positive and positive effect on farmers' income. Similarly, other paths can be analyzed, and it is found that the paths are valid.

5.5. Correlation Analysis Based on the Grey System Model

Table 8. Correlation coefficient Results of farmers' income satisfaction (Part)

Number	Level of development	Scale of industry	Market economy conditions	Knowledge acquisition	Level of science and technology	Production organization	Government support
1	0.7593	0.8982	0.9667	0.9531	0.9395	0.8999	0.9891
2	0.8261	0.9308	0.5090	0.6999	0.7176	0.6934	0.7524
3	0.7622	0.9401	0.5384	0.7105	0.7567	0.8752	0.7468
4	0.7230	0.7203	0.7567	0.9996	0.8235	0.5384	0.6922
5	0.9572	0.7540	0.7375	0.9648	0.5090	0.4666	0.7126
6	0.7017	0.5384	0.7567	0.7560	0.4179	0.6363	0.9758
7	0.9072	0.7815	0.5714	0.5346	0.3544	0.3333	0.4375
8	0.9471	0.5384	0.5384	0.9628	0.4179	0.6363	0.5384
9	0.9458	0.6999	0.7228	0.7841	0.7555	0.7778	0.9255
10	0.7530	0.7012	0.9644	0.7010	0.9894	0.8370	0.7121

In order to ensure the accuracy of the analysis results, we analyzed all 1,500+ samples and extracted the correlation data results of ten of them. The data in Table 8 indicates the degree of correlation between each value of the questionnaire filled in by the participants and the value of farmer

satisfaction, where a larger value indicates a greater degree of correlation. This result is only an individual result, and a single result is not indicative of the overall data.

The correlation results were obtained through the grey relational analysis of the software. As can be seen from Table 9, the correlation between development level and farmers' income satisfaction is the highest, ranking first, while the correlation between industrial scale and farmers' income satisfaction is the lowest, ranking lowest. Overall, the correlation between the two influencing factors and farmers' income satisfaction is above 0.5, and these indicators can to a large extent characterize the overall situation of industrial development. This shows that industrial development and farmers' income level have a large degree of influence, and the level of industrial development has the greatest impact on farmers' income.

Table 9. Results of correlation degree of farmers' income satisfaction

Evaluation item	Correlation degree	Ranking
Level of development	0.91	1
Scale of industry	0.758	2

Table 10 shows that the correlation between the degree of knowledge mastery and the level of industrial development is the strongest, ranking first, while the correlation between the level of science and technology and the level of industrial development is the weakest, ranking last. Overall, the correlation between the four influencing factors and the level of industrial development is above 0.5, and these indicators can to a large extent characterize the overall situation of the level of industrial development. This shows that the degree of knowledge acquisition has the greatest impact on the level of industrial development.

Table 10. Results of development level correlation degree results

Evaluation item	Correlation degree	Ranking
Knowledge acquisition	0.804	1
Government support	0.748	2
Market economy conditions	0.707	3
Level of science and technology	0.696	4

The way production is organized is most closely related to the scale of an industry, ranking first, while market economic conditions are least closely related to the level of industrial development, ranking lowest. These indicators can largely characterize the overall situation of the scale of an industry, which shows that the way production is organized has the greatest impact on the scale of an industry.

Table 11. Result of industrial scale correlation degree

Evaluation item	Correlation degree	Ranking
Production organization	0.957	1
Government support	0.791	2
Market economy conditions	0.603	3

6. CONCLUSION

This paper focuses on the development path of the agriculture industry in Fuzhou City and its impact on farmers' income. Three models, namely multiple linear regression, structural equation and grey system, are used to analyze the data from multiple perspectives. The conclusions are as follows:

(1) The results of the multiple linear regression analysis show that the research samples are independent of each other, and at the 1% significance level, there is a significant positive correlation between industrial development and farmers' income satisfaction; market economy conditions, knowledge acquisition, the level of science and technology, government support and development level are all positively correlated; market economic conditions, government support, production organization methods and industry scale are all positively correlated.

(2) The structural equation model reveals the basic impact of industrial development on farmers' income, indicating that the level and scale of development are positively correlated with farmers' income satisfaction. Market economic conditions, knowledge acquisition, scientific and technological level, and government support have a positive effect on the level of development, and market economic conditions, government support, and production organization methods have a positive effect on the scale of development. All of these are significant at the 1% level.

(3) The team chose the grey relational analysis method, and the results showed that industrial development has a significant impact on farmers' income levels. Among the factors influencing industrial development, the degree of knowledge mastery is most closely related to the level of development, while the mode of production organization is most closely related to the scale of development. The overall correlation degree of other factors is greater than 0.5, which means that the selected indicators can all affect industrial development.

Based on the research conclusions, this article puts forward the following five policy recommendations:

- (1) Strengthen vocational skills education to lay a solid foundation for industrial development.
- (2) Promote new cooperative models to promote joint ventures between village enterprises to generate income.
- (3) Increase government support to optimize the agriculture industry ecology.
- (4) Continue to integrate marketing models to create a competitive advantage in the market.
- (5) Increase investment in industrial research and development to achieve innovation "acceleration".

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