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Empirical Test on Economic Benefit of Promoting the Industrialization of Chinese Cuisine under Strategy of Rural Revitalization

--Taking Zengcheng Area as an Example

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Abstract. Aiming to quantitatively analyze the effect of rural rejuvenation strategy on the economic benefit level of popularizing vegetable heart industrialization, a growth evaluation model based on factor analysis and joint decision was put forward. Using the descriptive statistical analysis method to construct the constraint parameters of economic benefit growth evaluation of the industrialization promotion of Chinese cabbage under the strategy of rural revitalization. Through many field investigations, the original data of the economic benefit growth of the vegetable heart were obtained. Based on this, this paper constructs a statistical analysis model of inspection, analyzes the economic benefit relationship between late vegetable heart production and sales in Zengcheng area by using factor analysis method, and uses SPSS statistical analysis technology to analyze and evaluate quantitatively the economic growth model of the popularization of vegetable heart industrialization. The joint association rule decision method is used to test and evaluate the economic benefits of Zengcheng's late cabbage industry development. The empirical analysis results show that the model can effectively realize the quantitative analysis of the relationship between the output and sales of Zengcheng late vegetable heart, and the confidence level of the analysis results is high, which can play an important role in the development of Zengcheng late vegetable heart industry.

Keywords: rural revitalization strategy, industrialization promotion of cauliflower, economic benefit, empirical test, factor analysis.

1. Introduction

With the promotion of rural revitalization strategy and the deepening of rural industrial economic reform, in order to improve the level of rural economic growth, guide and promote the flow of more capital, technology, talent and other elements to agricultural rural areas, To arouse the enthusiasm of farmers, we need to establish an effective mode of industrial economic growth, combine the advantages of local economic crops, and improve the level of rural economic growth [1]. In this paper, the pattern of industrialization extension of Zengcheng late vegetable heart is studied. Under the strategy of rural rejuvenation, the level of benefit to economic growth of the industrialization promotion of vegetable heart in the growing area is analyzed. Zengcheng vegetable heart, also known as Zengcheng late vegetable heart, high foot vegetable heart, is the local farm products in Zengcheng city. Due to the limited planting time and regional limitation of Zengcheng vegetable heart, the promotion efforts are insufficient [2]. This has led to the fact that Zengcheng's late vegetable heart is only more famous in the Pearl River Delta region at the present stage, but is still relatively low in the areas outside the Pearl River Delta. In order to enhance the economic benefits of promoting the industrialization of vegetable heart, it is necessary to quantitatively evaluate the role of rural rejuvenation strategy in promoting the economic benefits of the industrialization of Chinese cabbage, and through field research, consulting literature and other ways to carry out research, and analyze its problems and limitations. In order to enable the areas with limited popularization factors to take measures according to local conditions and develop local characteristic industries, so as to promote economic development, raise the income of rural villagers, and raise the local economic level, it has great economic benefit and practical value to study the economic benefit test model of Chinese cabbage industrialization promotion under the strategy of rural rejuvenation.

2. Research Model and Constraint Parameter Analysis

2.1 Object Model

From the quality and market value of Zengcheng late vegetable heart to the factors limiting its popularization, this paper analyzes the advantages and disadvantages of Zengcheng's late vegetable heart industry development from various aspects, and establishes the economic benefit demonstration test model of vegetable heart industrialization promotion under the strategy of rural revitalization. The present situation and development prospect of Zengcheng's late vegetable heart industry are shown, which can provide powerful help for the development of Zengcheng's late vegetable heart industry. Based on the reality, and according to the current situation of the Zengcheng late vegetable heart industry development situation to make targeted research and discussion, through market research and visits, got Zengcheng late vegetable heart promotion materials, and use the correct statistical analysis technology to analyze and summarize, from the reality, get the feasible implementation plan. Combining the descriptive statistical analysis method, the level of economic benefit of popularizing Chinese cabbage industrialization under the strategy mode of rural rejuvenation is analyzed statistically [3]. The risk decision evaluation method is used to analyze the quantitative analysis model of the economic benefit of popularizing the industrialization of Chinese cabbage by the rural rejuvenation strategy, and the integrated evaluation decision method is adopted in the statistical cycle. This paper analyzes the control variables and explanatory variables of the economic benefits of popularizing the vegetable heart industrialization, and constructs a statistical variable model of the economic benefits of the popularization of the vegetable heart industrialization by the rural rejuvenation strategy. This paper gives the variable distribution of the economic benefit level of popularizing the industrialization of Chinese cabbage by the strategy of rural rejuvenation, which is shown in Table 1.

The quantitative regression analysis model for evaluating the economic benefit of the industrialization of Chinese cabbage is constructed. If the continuous distribution interval is given, the quantitative regression analysis of the stability of the evaluation of the economic benefit of the industrialization of the vegetable is obtained, and the decision formula of the stability of the evaluation of the economic benefit of the industrialization is obtained as follows:

$$u(t) = w(t)(u_0, u_1) + \int_0^t \frac{\sin((t-t')|\nabla|)}{|\nabla|} F(u(t'))dt' \tag{1}$$

Table 1. Selection and description of variables

Variable name	Meaning of variables
Industrial structure	It describes the characteristics of the industrial structure under the level of economic benefit of the industrialization of Chinese cabbage
Rural economic growth profit level	Ratio of cost to cash flow level of vegetable heart output
Economic benefit decision evaluation coefficient	Profitability and influence factors of financial elasticity constraint strip planting of Chinese cabbage
Sensitive surplus	Total assets-annual earnings rate of the lag period
Industrial Planning and growth coefficient of Chinese Cabbage	Level of control and decision-making ability of the strategic development of rural revitalization under internal control.
Financing policy	The proportion of the total amount of financing and risk management.
Economic growth rate	The promoting effect of popularizing Economic benefit level on Economic growth in the Statistical cycle of Chinese Cabbage industrialization
Regression standard deviation	Describe the statistical error that the economic benefit of popularizing Chinese cabbage industrialization is affected by the strategy level of rural rejuvenation.

Where, $F(u) = |u|^4 u$, selects the financial elasticity constraint control method to carry on the sample analysis to popularize the vegetable heart industrialization, according to the sample test

analysis result, analyzes the marketing factor of the vegetable heart industry economic growth, adopts the negative utility compensation method [4], The decision model of quantification evaluation of output is described as follows:

$$M_{Dup}=\sum_{i=1}^{n}(f(I_1I_{l_i})+2f(I_2I_{l_i})+...+l_if(I_{l_i}I_{l_i}))=\sum_{i=1}^{n}l_i+\sum_{i=1}^{n}(f(I_1I_{l_i})+2f(I_2I_{l_i})+...+(l_i-1)f(I_{l_i-1}I_{l_i}))=M_{DB}+\sum_{i=1}^{n}\sum_{j=1}^{l_i-1}jf(I_jI_{l_i}) \quad (2)$$

When the number of groups is $Q=m$, let x^* be a limit point in the solution set $\{x_k\}$, and obtain the quantitative evaluation value of the economic benefit level factor of popularizing the vegetable heart industrialization, and combine with the fuzzy constrained control method. Statistical analysis and sample variance evaluation of economic benefit level [5].

2.2 Analysis of Constraint Parameters for Economic Benefit Growth Evaluation

Under the constraint of the significance of government expenditure, the decision objective vector of vegetable heart industry extension under the strategy of rural revitalization is described as the quantitative evaluation panel data of the economic benefit level of $x_i=(x_{i1},x_{i2},\cdots,x_{is})^T$, industrialization promotion under the association rule decision meets:

$$\begin{aligned}0\le&\left[y^T(t)\Sigma^TT\Sigma y(t)-f^T(y(t))Tf(y(t))\right]+\left[-y^T(t)U\Sigma_1y(t)+2y^T(t)U\Sigma_2f(y(t))-f^T(y(t))Uf(y(t))\right]\\&+\left[-y^T(t-\sigma)V\Sigma_1y(t-\sigma)+2y^T(t-\sigma t)V\Sigma_2f(y(t-\sigma))-f^T(y(t-\sigma))Vf(y(t-\sigma))\right]\end{aligned} \quad (3)$$

Under the condition of continuous boundedness, the control function $(u,u_t)\in C_t(K,\dot{H}_x^{s_c}\times\dot{H}_x^{s_c-1})$, of rural rejuvenation strategy for quantitative analysis of economic benefit level of Chinese cabbage industrialization promotion is obtained according to the above analysis [6]. Using descriptive statistical analysis method to construct the growth function of the economic benefit level of popularizing the industrialization of cauliflower, which is described as follows:

$$\min_{0\le\alpha_i\le c}W=\frac{1}{2}\sum_{i,j=1}^{l}y_iy_j\alpha_i\alpha_jK(x_i,x_j)-\sum_{i=1}^{l}\alpha_i+b\left(\sum_{i=1}^{l}y_j\alpha\right) \quad (4)$$

In the formula, (x_i,x_j) denotes the characteristic sample of the economic benefit level of Chinese cabbage industrialization promotion, b is the elastic template matching coefficient of the sample, and combining with the financial elasticity classification constraint control method, the sample piecewise regression analysis of economic growth is carried out. By using factor analysis method, the fuzzy sample matching set of economic growth level is obtained. Taking the optimal economic benefit as the constraint parameter model, the constraint rules for quantitative evaluation of the factors of economic benefit level of popularizing vegetable heart industrialization are formulated as follows:

$$\min(f)=\sum_{i=1}^{m}\sum_{j=1}^{n}C_{ij}X_{ij} \quad (5)$$

$$\text{s.t}\begin{cases}\sum_{j=1}^{m}X_{ij}=a_i,i=1,2\cdots m\\\sum_{i=1}^{m}X_{ij}=b_i,j=1,2\cdots n\\X_{ij}\ge0,i=1,2\cdots m,j=1,2\cdots n\end{cases} \quad (6)$$

In this paper, the constraint parameters of economic benefit growth evaluation of Chinese cabbage industrialization promotion under the strategy of rural revitalization are constructed. Through many field investigations, the original data of economic benefit growth of Chinese cabbage are obtained, and big data information fusion method is adopted [7]. The training sample set for statistical analysis of the original data is as follows:

$$S = \{(x_1, x_1), \cdots, (x_l, x_l)\} \tag{7}$$

Based on the fuzzy cluster analysis method, taking the economic benefit level of vegetable industrialization as the decision objective function, the output of big data fusion clustering is obtained as follows:

$$G_i = \begin{cases} \geq 0, \alpha_i = 0 & S_R \\ = 0, 0 < \alpha_i < C & S_S \\ \leq 0, \alpha_i = C & S_E \end{cases} \tag{8}$$

Among them, $\sum_{i=1}^{l} y_i \alpha_i = 0$, S_S and S_E represent market redundancy information, actual consumption level and disposable income level of economic growth respectively. According to the results of quantitative analysis of income level, a constraint parameter model is constructed. The demonstration test analysis of the economic benefit growth level is carried on [8] l.

3. Economic Benefit Evaluation and Decision-Making of Popularization of Chinese Cabbage Industrialization

On the basis of constructing the constraint parameter model of economic benefit growth evaluation, the economic benefit evaluation and decision making are carried out [9]. Based on factor analysis and joint decision, this paper puts forward a growth evaluation model of economic benefit of popularizing Chinese cabbage industrialization based on rural rejuvenation strategy. Factor analysis method is used to analyze the economic benefit relationship between late vegetable heart production and sales in Zengcheng area. The sensitivity group regression model of vegetable heart industry growth is described as follows:

$$G_i = \sum_j \alpha_j y_i y_j K(x_i, x_j) + y_i b - 1 \tag{9}$$

The statistical analysis of economic growth level is carried out by using the method of segmented sample detection. The Probity multiple regression analysis model was established to evaluate the economic benefit level of vegetable industrialization promotion. The statistical characteristics of the rural revitalization strategy on the economic benefits of vegetable industrialization promotion were obtained as follows:

$$\begin{cases} v_k \sim t_{\tilde{v}_k}\left(\tilde{u}_{v,k}, \tilde{\Sigma}_{vv,k}\right) \\ e_k \sim t_{\tilde{v}_k}\left(\tilde{u}_{e,k}, \tilde{\Sigma}_{ee,k}\right) \end{cases} \tag{10}$$

By introducing the characteristic sequence of capital parametric regression evaluation, it is obtained that the optimal combination problem is described as:

$$\max_{xi,yi,j} \max_{xi,yi,j} TP = \frac{1}{tp}, i, j \in \{0,1,\ldots,v+1\} \tag{11}$$

Where

$$tp = \max\left\{ \max_{i \in V} \max_{i \in V} (x_i . \frac{si}{\eta p} \sum_{i \in V} x_i), \max_{(i,j) \in E} \max_{(i,j) \in E} (\frac{d_{i,j}(x_i - x_j)^2}{y_{i,j}}) \right\} \tag{12}$$

This paper analyzes the explanatory variables of rural rejuvenation strategy to the quantitative analysis of economic benefit level of popularizing vegetable heart industrialization, analyzes the dual decision model of rural rejuvenation strategy on the surplus of vegetable heart output, and constructs the fuzzy decision statistical function:

$$C_{xx}(j\tau)=\sum_{r=1}^{t}\sum_{q=1}^{k_2}\left\|W_i^T x_{ir}-W_i^T x_{irq}\right\|^2 B_{irq}=tr(W_i^T[\sum_{r=1}^{t}\sum_{q=1}^{k_2}(x_{ir}-x_{irq})(x_{ir}-x_{irq})^T B_{irq}]W_i)=tr(W_i^T H_2 W_i) \tag{13}$$

Factor analysis method was used to analyze the economic benefit relationship between the output of late cabbage and sales in Zengcheng area, and the average confidence level of quantitative evaluation was obtained as follows:

$$k=Int(\frac{n\overline{Q}}{1-\overline{\overline{Q}}})+1 \tag{14}$$

This paper analyzes the explanatory variables and the explanatory variables of the quantitative analysis of the economic benefit level of popularizing the industrialization of cauliflower by the strategy of rural rejuvenation, and the optimized combination function is recorded as follows:

$$\min imize \quad \frac{1}{2}\|w\|^2+C\sum_{i=1}^{n}(\xi_i+\xi_i^*) \qquad subject\ to \quad \begin{aligned} y_i-(w^{'}\Phi(x_i)+b)&\le\varepsilon-\xi_i \\ (w^{'}\Phi(x_i)+b)-y_i&\le\varepsilon-\xi_i^* \\ \xi_i,\xi_i^*&\ge 0, i=1,2,\cdots,n; C>0 \end{aligned} \tag{15}$$

This paper analyzes the endogenous control variables of the output and sales of late cabbage in Zengcheng area with the method of piecewise sample regression analysis, and carries out quantitative evaluation and analysis with the empirical test analysis model to improve the quantitative evaluation ability of the economic growth of the industrialization promotion of Chinese cabbage [10].

4. Empirical Analysis and Testing

Aiming to verify the economic growth level of Zengcheng late cabbage industrialization promotion, this paper uses the model to carry on the empirical analysis, the empirical analysis software uses the SPSS19.0 statistical analysis software, the number of statistical samples for evaluating the economic growth level of the vegetable heart industry is 609. The number of information analysis samples of Chinese cabbage capital input is 410 and 13.4%, 20.11% of the total investment. Combined with Matlab simulation analysis, the descriptive statistical analysis results of industrial output and economic benefits in Zengcheng area are shown in Table 2.

Table 2. Result of descriptive statistical analysis of economic benefit of industrial output in Zengcheng area

Year	Investment growth level	Output surplus level	Capital structure distribution
2010	0.564	0.653	0.623
2011	0.654	0.765	0.654
2012	0.712	0.864	0.323
2013	0.734	0.898	0.454
2014	0.754	0.890	0.468
2015	0.876	0.901	0.459
2016	0.909	0.934	0.755
2017	0.965	0.945	0.585
2018	0.990	0.965	0.887

According to the above descriptive statistical analysis results, the economic benefit model of the output and sales of late vegetable heart in Zengcheng area is shown in figure 1.

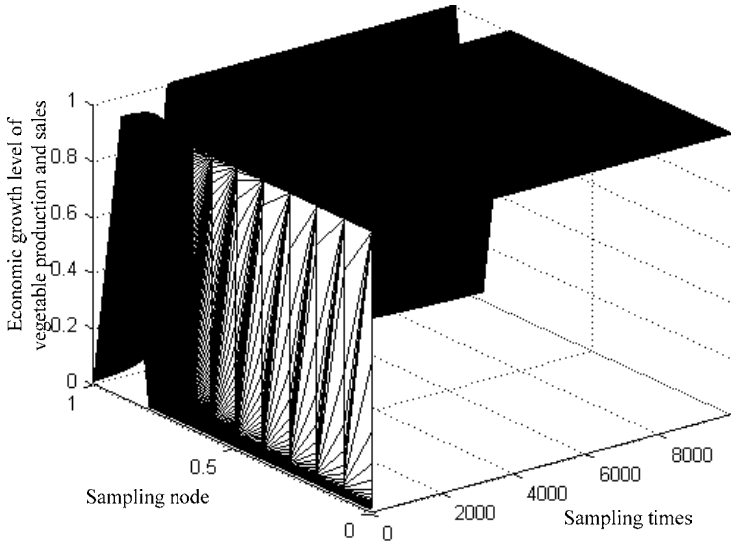

Fig.1 Economic benefit relationship between late vegetable production and sales in Zengcheng area

Figure 1 shows that the model can be used to quantitatively analyze the economic benefit relationship between the late vegetable heart output and the sales in Zengcheng area, and the results are accurate and reliable. The expected value of the rural rejuvenation strategy for the growth evaluation of the economic benefit of the industrialization promotion of the vegetable heart is tested. The relationship between the fitting results and the elastic modulus is shown in figure 2.

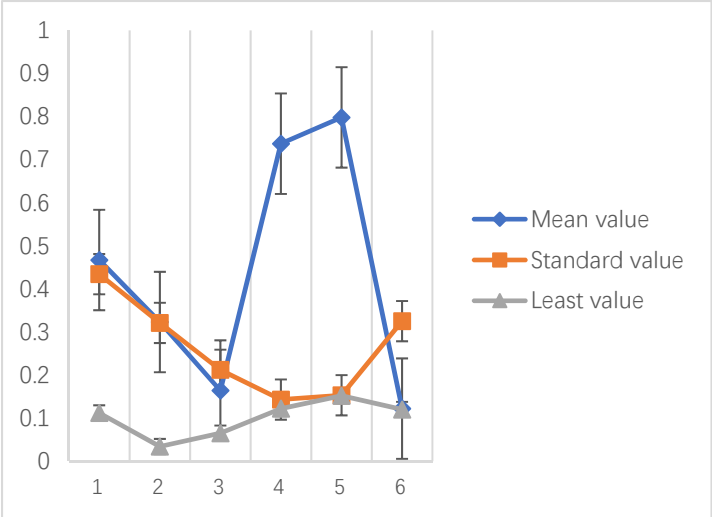

Fig.2 The result of empirical analysis on the economic benefit of popularizing Chinese cabbage industrialization by rural rejuvenation strategy

Figure 2 shows that the model can effectively realize the quantitative analysis of the relationship between the output and the sales of Zengcheng's late vegetable heart, and the empirical analysis results of the rural revitalization strategy are accurate and reliable in evaluating the economic benefits of the industrialization of Chinese cabbage. The confidence level of the analysis results is high.

5. Conclusion

In this paper, a kind of economic growth evaluation model based on factor analysis and joint decision is put forward to evaluate the economic benefit of the promotion of vegetable heart

industrialization. According to the analysis results, the market economy model of the economic growth of vegetable heart in Zengcheng area is established. Analyzing the unique value of Zengcheng late vegetable heart, the promotion limitation, the market prospect, and arranging, synthetically analyzing, obtaining the feasible plan, in the development link, the packing link, the transportation link, The advanced technology and modern mode are adopted in the aspects of sales links to improve the quality of late vegetable and to form an integrated management mode of production processing sales and service and to construct an industrial chain. Using innovative management and operation concept, breaking through the obstacles of promoting late vegetable heart in Zengcheng, grasping the market demand macroscopically, widening the sales range of late vegetable heart in Zengcheng, opening up its market and meeting the needs of consumers, The popularity of Zengcheng's late vegetable heart has been continuously raised, so that the Zengcheng late vegetable heart project has achieved considerable and steady development, and radiation has led to the development of other agricultural products and ecological tourism in Zengcheng, thus increasing the income of local villagers. The standard of living of the local people is constantly raised.

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