Analysis of Hangzhou Citizens' Satisfaction with the Current Situation of Rural Governance in Hangzhou: Based on the Optimal Scale Regression Model Perspective

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Abstract: As a key initiative to connect urban and rural areas and improve rural quality, the effectiveness of rural governance not only concerns the well-being of rural residents, but also profoundly affects the experience and perception of citizens. This study takes Hangzhou City as the research site to investigate the awareness and satisfaction of Hangzhou citizens towards the implementation of rural governance in Hangzhou. Based on data collected from questionnaire survey and Field Survey, the optimal Scale Regression Model is employed to identify factors influencing Satisfaction Level under Group Heterogeneity, revealing the underlying mechanisms, with the aim of providing better recommendations for rural governance in Hangzhou.

Keywords: Rural governance in Hangzhou; Satisfaction evaluation; Significance test; Optimal scale regression analysis

DOI:10.69979/3041-0843.25.03.046

1 Introduction

On February 23, 2025, the 13th No. 1 central document since the 18th National Congress of the Communist Party of China focusing on guiding work related to agriculture, rural areas and rural people was officially released. The document clearly called for further deepening of rural reform, with a strong emphasis on advancing rural construction and improving the rural improvement system[1].In active response to the national initiative, Hangzhou has vigorously promoted rural improvement efforts. Guided by the philosophy of “natural, traditional, modern, and harmonious,” and using the “Thousand Villages Demonstration, Ten Thousand Villages Improvement” Project as a practical framework, the city has set its sights on achieving common prosperity across all regions and urban-rural harmony and beauty. Amid the wave of rural construction in the new era, Hangzhou is shaping a unique “Hangzhou Model” for rural improvement[2].

Therefore, to gain an in-depth understanding of the public's actual perception of and satisfaction with rural governance efforts, this study employed a sampling survey method to conduct a questionnaire survey and field visits in the administrative districts of Hangzhou. A statistical model was then established to carry out a quantitative analysis of residents’ satisfaction with the current state of rural governance in Hangzhou.

2 Sampling Design Programme

In order to determine the sample capacity, this study firstly conducts a preliminary analysis through a pre-survey targeting the satisfaction of Hangzhou citizens with rural governance. Based on the preliminary survey data and relevant calculation formulas, the final sample size was determined to be 700.

At the specific sampling stage, this study used a multi-stage sampling method combining πps sampling and quota sampling. Firstly, the πps sampling method was used to determine the administrative districts and townships for the study; and then the quota sampling method was used to randomly sample the selected communities and villages. Finally, 673 valid questionnaires were obtained, with a validity rate of 96.14 per cent. All the data used in the study were tested for reliability and validity to ensure the accuracy and scientific validity of the sample.

3 Descriptive Statistical Analysis of Hangzhou Citizens' Overall Satisfaction with Rural Governance

After using descriptive statistical analysis on the 673 valid questionnaires recovered from this survey, the survey obtained the following results of Hangzhou citizens' total satisfaction with rural governance in Hangzhou:

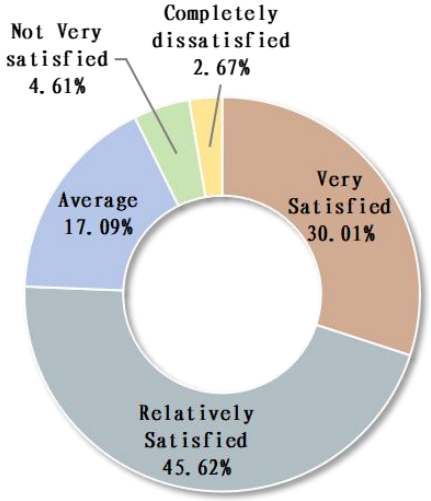

Figure 1. Pie chart visualising satisfaction with rural governance in Hangzhou

As shown in the figure above, 75.63% of respondents expressed satisfaction with rural governance. Among them, 30.01% were very satisfied, and 45.62% were fairly satisfied. Those with a neutral Satisfaction Level toward rural governance accounted for 17.09%. Only 7.28% of respondents expressed dissatisfaction with rural governance. This indicates that the majority of the public holds a positive and approving attitude toward the current rural governance efforts in Hangzhou, while only a small minority holds a negative view. This may be attributed to a limited Level of Understanding among some members of the public regarding rural governance and its implementation in Hangzhou, as well as to certain unresolved issues within the governance process itself. Overall, the prospects for rural governance in Hangzhou are bright, with a highly favorable development trend.

4 Evaluation Analysis of Satisfaction with the Current Situation of Rural Governance in Hangzhou Based on Optimal Scale Regression

The perceived effectiveness of rural governance may vary based on the background characteristics of individual citizens. Therefore, this study employs the optimal Scale Regression Model to accurately and objectively perform quantitative analysis of Satisfaction Level using citizens' basic information.

4.1 Selection of Variables

Combined with the questionnaire, age, structure of residence, region, willingness to pay continuous attention, degree of understanding, willingness to understand, willingness to publicise, willingness to cooperate are selected as independent variables, and citizens' satisfaction with current rural governance is the dependent variable, and an optimal scale regression model is established, so as to achieve the purpose of predicting the views of different individuals on their satisfaction with rural governance.

4.2 Assignment of Numbers

In this study, citizens' satisfaction with current rural governance is defined as the dependent variable, where $y=1$ represents that citizens' satisfaction with current rural governance is completely dissatisfied, $y=2$ represents less satisfied, $y=3$ represents generally satisfied, $y=4$ represents relatively satisfied, and $y=5$ represents very satisfied. The independent variables were set as follows:

Table 1. Setting of independent variables

Variables	Assignment
Age X_1	Under 18 years old=1，18-25 years old =2， 26-40 years old =3，41-65 years old =4， 66 years old and above =5
Structure of the place of residence X_2	Rural=1，Urban=2
Area X_3	Xiaoshan District = 1, Chun'an County = 2, Tonglu County = 3, the Xihu District = 4, Yuhang District = 5, Lin'an District = 6
Willingness to continue to pay attention X_4	Very willing = 1, Somewhat willing = 2 Not very willing = 3, Completely unwilling = 4
Degree of understanding X_5	Very familiar = 1, Fairly familiar = 2, Not very familiar = 3, Not at all familiar = 4
Willingness to know X_6	Very willing = 1, Somewhat willing = 2 Not very willing = 3, Completely unwilling = 4
Willingness to publicise X_7	Very willing = 1, Somewhat willing = 2 Not very willing = 3, Completely unwilling = 4
Willingness to cooperate X_8	Very willing = 1, Somewhat willing = 2 Not very willing = 3, Completely unwilling = 4

4.3 Definition of the Model

Based on the above results, the optimal scale regression equation model is first defined as:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$

4.4 Results and Analyses

With the help of SPSS tool, the optimal scale regression was performed on the collected data of 673 samples and finally it was found that all the eight independent variables passed the significance test as follows:

Table 2. F-test table for the model

	Sum of squares	df	Mean square	F	Sig.
Regression	269.747	8	33.718	67.436	< 0.001
Residuals	332.003	664	.500		
Total	601.750	672			

In the table above, the p-value of the F-test is less than 0.05, indicating that the model as a whole has at least one independent variable that has a significant linear relationship with the dependent variable. The overall model test is meaningful, demonstrating that the fitted model for the transformed scores is statistically significant[3].

Table 3. Optimal scale regression goodness-of-fit table

Multiple R	R^2	Adjustment R^2	Significant prediction error
.670	.648	.642	.707

Through the above table, it can be found that the coefficient of determination of the model R^2 is 0.648, which means that all the independent variables can explain the reason for the change of 64.8% of the satisfaction with rural governance, which reflects a high degree of goodness of fit of the model.

Table 4. Estimated importance of variables in the equation

	Standardised coefficient Beta	Sig.	Relevance			Importance	covariance statistics	
			Zero order	partial	portion		tolerances	VIF
Age	.188	<0.001	-.098	-.107	-.080	.014	.931	1.074
Structure of the place of residence	.181	<0.001	-.130	-.079	-.059	.054	.962	1.040
Area	.145	<0.001	-.038	-.106	-.079	.041	.954	1.048
Willingness to continue to pay attention	.180	<0.001	.552	.106	.080	.146	.365	2.741
Degree of understanding	-.083	.006	.330	.178	.134	.405	.852	1.174
Willingness to know	.132	.006	.580	.150	.113	.204	.360	2.780
Willingness to publicise	-.081	.006	.573	.148	.111	.084	.381	2.624
Willingness to cooperate	-.060	.041	.535	.157	.118	.052	.433	2.309
Dependent variable: satisfaction with current rural governance								

Observing the Beta coefficients, it can be found that age, structure of residence, region, willingness to pay continuous attention, and willingness to know are positively correlated with the dependent variable, while the degree of understanding, willingness to publicise, and willingness to cooperate are negatively correlated with the dependent variable.

Among the eight independent variables defined, the one that has the greatest influence on the dependent variable is the degree of understanding, accounting for 43.5%, and age has the lowest importance, accounting for 1.4%. The eight variables in descending order of importance are: degree of understanding, willingness to understand, willingness to pay continuous attention, willingness to publicise, structure of place of residence, willingness to cooperate, region, and age.

Whether the independent variables are covariate or not can be judged by the size of the tolerance value, and when the tolerance value is greater than 0.1, it can be considered that there is no covariate. From the above table, it can be seen that the tolerance values of the eight independent variables are all greater than 0.1, indicating that there is no obvious multicollinearity in this model.

Based on the above results, the optimal scale regression model can be obtained as:

$$Y = 0.188X_1 + 0.181X_2 + 0.145X_3 + 0.180X_4 - 0.083X_5 + 0.132X_6 - 0.081X_7 - 0.060X_8$$

5 Application of the Optimal Scale Regression Equation

From the regression equation, it can be seen that rural governance satisfaction is related to age, structure of residence, region, willingness to continue to pay attention, degree of understanding, willingness to understand, willingness to publicise, willingness to cooperate, and based on the above model, it is possible to specifically analyse the views of specific Hangzhou citizens on their satisfaction with rural governance.

The model's parameters were set to those of a citizen from Xiaoshan District, Hangzhou, with permanent residence in a rural area, a relatively high willingness to pay continuous attention, a relatively good Level of Understanding, a relatively high Willingness to Understand, a relatively high willingness to promote, and a relatively high willingness to cooperate. Only the age was varied, and the regression model was used to calculate the respondent's Satisfaction Level with Rural Governance under these baseline conditions. The final results are as follows:

Table 5. Analysis of Satisfaction under Optimal Scale Regression

Age	Under 18 years old	18-25 years old	26-40 years old	41-65 years old	66 years old and above
Y	1.3275	0.3598	0.3176	-0.6715	-0.9847
Satisfaction	Very Satisfied	Relatively Satisfied	Average	Not Very Satisfied	Completely Dissatisfied

A comparative analysis of the results above reveals that as age increases, the Satisfaction Level of Hangzhou citizens regarding Rural Governance tends to decrease. A possible explanation for this is that teenagers under the age of 18 have a strong curiosity about new things and are more supportive of the achievements of Beautiful Countryside's renovation, such as rural wall paintings and the inheritance of traditional handicrafts. Individuals aged 18-40 gradually feel pressure from their studies and the need to survive in society, leaving them with less time to experience the results of rural revitalization firsthand. However, this new generation of young adults is highly enthusiastic about engaging in rural construction and increasingly attentive to the state of rural construction, leading to a higher Satisfaction Level regarding Rural Governance. For those over 40, their methods of acquiring knowledge are more established, and their ability to embrace new concepts tends to decline with age, resulting in a lower Satisfaction Level with Rural Governance.

6 Findings and related recommendations

6.1 Conclusion of the Research on Hangzhou Citizens' Satisfaction With Hangzhou's Rural Governance

In the process of building a beautiful countryside and promoting urban-rural integration, rural governance is a very important part. Hangzhou citizens' satisfaction with rural governance are all high. According to the established model, it can be seen that the two factors, the degree of understanding and the willingness to understand, have the greatest influence on the satisfaction. According to the results: the willingness to understand and the degree of understanding are positively proportional to the satisfaction of rural governance, in terms of the degree of understanding, the group with the lowest

degree of understanding of rural governance has the lowest satisfaction of rural improvement, and the group with the degree of understanding as more understanding has the highest satisfaction of rural governance.

6.2 Suggestions for Enhancing Citizen Satisfaction with Rural Governance in Hangzhou

6.2.1 Strengthen Publicity and Education to Enhance Public Awareness

Through a combination of online and offline approaches, comprehensively promote the policies, achievements, and significance of rural governance, especially targeting groups with a currently low Level of Understanding. Deliver information precisely to spark their interest and enthusiasm for participating in rural governance, encouraging more citizens to actively follow and gain a deeper understanding of rural governance work. [4].

6.2.2 Excavating and Inheriting Rural Culture to Enrich the Spiritual Connotation

Thoroughly tap into local cultural resources, trace the historical and cultural lineage of the area, and develop unique rural cultural IPs. This approach promotes the deep integration of agriculture, culture, and tourism while safeguarding the diversity of rural culture[5]. Through initiatives such as establishing rural cultural museums, rural culture can be incorporated into the governance process, preserving nostalgic memories and fulfilling residents' spiritual expectations for rural governance.

6.2.3 Improving Infrastructure and Services to Strengthen the Foundations of Development

Continue to increase investment in rural infrastructure, such as upgrading rural roads and expanding network coverage, to improve residents' convenience. At the same time, enhance the quality of rural public services by strengthening rural medical facilities and optimizing the allocation of educational resources, thereby improving the rural governance Satisfaction Level in both hardware and software aspects.

6.2.4 Strengthening the Training and Introduction of Talents to Provide intellectual support

On the one hand, various kinds of skills training are carried out for local villagers, such as agricultural technology, tourism services, handicraft production, etc., to enhance the ability of villagers to participate in rural governance and development; on the other hand, preferential policies are introduced to attract agricultural experts, rural planners and other professionals at the level of rural governance to devote themselves to the construction of the countryside, so that new vitality and creativity are injected into the rural governance [4].

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