Research on Influencing Factors of Farmers' Participation in Rural Tourism based on Bounded Rationality Theory

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Abstract: Studying the influencing factors of farmers' participation in rural tourism can help to find the internal motivation of farmers' participation in rural tourism and better develop rural tourism destinations. Based on the theory of bounded rationality, this study takes 6 districts and counties under the jurisdiction of Chongqing as the research area, and uses the Logistic regression model to study the influencing factors of farmers' participation in rural tourism in Chongqing. The results show that six factors, including the degree of recognition of rural tourism, government support, the number of participation in rural tourism training, distance from scenic spots, whether there are resources to invest in rural tourism projects, and household head's risk perception have a significant impact on farmers' participation in rural tourism.

Keywords: Bounded rationality theory; Rural tourism; Farmers participation

1. Theoretical basis and index selection

1.1 Bounded Rationality Theory

The economist Simon put forward the theory of bounded rationality. This theory holds that human behavior rationality is bounded rationality under the condition of complex environment and limited information resources, which mainly includes two aspects. The accuracy of subject decision-making evaluation is limited; second, people's cognitive ability, memory ability and information processing ability to the environment are limited, and at the same time, they must be affected by irrational factors such as emotions, feelings, desires, wills and other irrational factors in decision-making evaluation and management practice activities.

The bounded rationality theory holds that when decision makers make choices, they do not pursue the "maximum" and "optimal" results, but seek the "most satisfactory" results. This is because human knowledge is limited, and decision makers cannot grasp all the Information and understanding of the detailed laws of decision-making cannot fully process information.

1.2 The theory of bounded rationality and the adaptability of farmers' participation in rural tourism

Whether farmers are willing to participate in rural tourism also has bounded rationality, which is mainly reflected in the following aspects: (1) farmers have limited grasp of rural tourism information. Due to factors such as policy dissemination channels and rural natural environment, it is impossible for farmers to have complete policy information. (2) Farmers have limited awareness of rural tourism-related policies. Farmers have different views on the prospects of rural tourism due to their different educational levels and their own experience. (3) The ability of farmers to participate in rural tourism is easily affected by the surrounding environment and their own objective conditions. The behavioral decisions of farmers are easily influenced by their relatives and friends around them, and they are also constrained by their own abilities.

Therefore, the behavior of farmers participating in rural tourism is not a completely rational decision, but a limited rational decision made by "social people" with limited minds. Whether farmers participate in rural tourism is affected by multiple factors such as their own cognition, external environment, and expectations. The application of bounded rationality theory can more comprehensively and deeply analyze the influencing factors that affect farmers' participation in rural tourism.

1.3 Indicator selection

With reference to relevant literature and the theory of bounded rationality, this paper selects 13 index factors that affect farmers' participation in rural tourism, which are divided into three dimensions: their own objective factors, external environmental factors, and income and risk factors. Among them, its own objective factors include 4 indicators: the age of the head of the household, the educational level, the per capita annual income of the family, and the degree of recognition of rural tourism.; external environmental factors include 5 indicators: government support, information disclosure, number of rural tourism trainings, participation of surrounding relatives and friends, and distance from scenic spots; benefits and risk factors include expected per capita annual income, whether there are resources to invest in tourism projects, whether to obtain loans, and the risk perception of household heads,4 indicators (Table 1).

Tab.1 Influencing factors and variables of rural tourism farmers' participation

Variable dimension	Variable name	Variable code
Self-objective factors	Age of head of household	X1
	Educational level	X2
	Annual household income per capita	X3
	Recognition of rural tourism	X4
External environmental factors	Government support	X5
	Information disclosure	X6
	Organization of rural tourism training times	X7
	Involvement of relatives and friends around	X8
	Distance from the scenic spot	X9
Benefits and Risk Factors	Expected annual income per capita	X10
	Whether there are resources to invest in tourism projects	X11
	Whether it is possible to get a loan	X12
	Risk perception of the head of household	X13

2. Research methods and data sources

2.1 Research method

In this study, the logistic regression model was used to quantitatively analyze the influencing factors of farmers' participation in rural tourism behavior.

Logistic regression model belongs to probabilistic nonlinear regression, which is a multivariate analysis method to study the relationship between binary observations and some influencing factors. The logistic regression model assumes that the probability distribution of the sample observations on the dependent variable is a sigmoid distribution. Because it is a nonlinear model, the parameter estimation often uses maximum likelihood estimation to maximize the probability of the number of observations of the dependent variable, so as to estimate the parameters. Logistic regression analysis of the dependent variable is a dichotomous variable, and it can also be extended to the case where the dependent variable is multi-category. This study uses a binary Logistic regression model to conduct research, and set whether the dependent variable participate in rural tourism as y (participate in rural tourism $y_i=1$, not participating in rural tourism $y_i=0$), the influencing factor is the independent variable k, and the corresponding binary dependent variable Logistic regression model is as follows:

$$\ln\frac{p}{1-p} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_k X_k \ln\frac{p}{1-p} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_k X_k \qquad (1)$$

In formula (1), p represents the probability of farmers participating in rural tourism, and $\beta_0\beta_0$, $\beta_1\beta_1$, $\beta_2\beta_2$, …, $\beta_k\beta_k$ are the estimated parameters of the variables that affect the participation of farmers. From formula (1), the calculation formula of the probability p of farmers participating in rural tourism can be obtained::

$$p = \frac{e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots\beta_k X_k}}{1+e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots\beta_k X_k}} \quad p = \frac{e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots\beta_k X_k}}{1+e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots\beta_k X_k}} \qquad (2)$$

Through the estimated value of parameter $\beta_i\beta_i$ (except $\beta_0\beta_0$) and the empirical results of Logistic regression, the influence of each influencing factor can be analyzed.

2.2 Data source and inspection

2.2.1 Questionnaire distribution and recovery

From August 10 to November 20, 2021, the researchers conducted 50 visits to 6 districts and counties in the main urban area of Chongqing: Jiangbei District, Yubei District, Jiulongpo District, Dadukou District, Shapingba District, and Beibei District. A total of 250 questionnaires were distributed and 215 valid questionnaires were recovered, with an effective rate of 86%. Statistics on the questionnaires show that 68.8% of the respondents participated in rural tourism, and 31.2% did not.

2.2.2 Reliability analysis

Using SPSS 19.0 software to test the reliability of the data of this questionnaire, the Cronbach α coefficient is 0.872, α > 0.7, indicating that the data obtained in this survey has high reliability.

2.3 Variable handling

In order to substitute the variables into the logistic regression equation, the variables need to be assigned, and the assignment results are shown in Table 2.

Tab.2 Variable assignment

Variable type	Statistical variable	Assignment
Explained variable	Whether to participate in rural tourism（Y）	No=0; Yes=1

Explanatory variables	Age of household head（X1）	under 30 years old = 1; 30~39 years old = 2; 40~49 years old = 3; 50~59 years old = 4; 60 years old and above = 5
	Education level（X2）	elementary school and below = 1; junior high school = 2; high school or technical secondary school = 3; college and above = 4
	Annual per capita household income（X3）	below 10,000 yuan = 1; 10,000-20,000 yuan = 2; 20,000-30,000 yuan = 3; more than 30,000 yuan = 4
	Recognition of rural tourism（X4）	no benefit at all = 1; no benefit = 2; average = 3; some benefit = 4; very great benefit = 5
	Government support（X5）	no support = 1; General = 2; Relative support = 3; Very support = 4
	Information disclosure（X6）	very low = 1; relatively low = 2; general = 3; relatively high = 4; very high = 5
	Organization of rural tourism training times（X7）	0 times = 1; 1-3 times = 2; 3-5 times = 3; more than 5 times = 4
	Involvement of relatives and friends around（X8）	no one participated = 1; a few people participated = 2; many people participated = 3
	Distance from the scenic spot（X9）	0~3 km=1；3~6 km=2；6km 以上=3
	Expected annual income per capita（X10）	below 20,000 yuan = 1; 20,000~35,000 yuan = 2; 35,000~50,000 yuan and above = 3; 50,000 yuan and above = 4
	Whether there are resources invested in tourism projects（X11）	Yes = 1; No = 2
	Whether it is possible to get a loan（X12）	Yes = 1; No = 2
	Risk perception of the head of household（X13）	no risk = 1; less risk = 2; greater risk = 3; great risk = 4

3. Results and Analysis

3.1 Research results

Using SPSS 19.0 software, binary Logistic regression analysis method was used for data processing, and the independent variable screening method was selected to enter the method. Variables with Sig < 0.05 can be entered into the equation, indicating a significant impact; the parameter B is positive, indicating that the variable is positively correlated with the dependent variable , the parameter is negative, the variable is negatively correlated with the dependent variable. The parameter results of the logistic model are shown in Table 3.

Tab.3 The parameter estimation results of the logistic regression model

		B	S.E	Wals	df	Sig.	Exp (B)
	Age of household head	.431	.246	2.042	1	116	4.401
	Education level	.750	.145	36.261	1	.082	2.000
	Annual per capita household income	1.083	.211	63.436	1	.026	3.659
	Recognition of rural tourism	.652	.061	81.888	1	.000	2.258
	Government support	1.137	.131	64.367	1	.000	1.311
	Information disclosure	.692	.057	16.953	1	.016	2.004
step 1[a]	Organization of rural tourism training times	.583	.460	2.606	1	.105	1.081
	Involvement of relatives and friends around	.979	.131	64.367	1	.000	1.047
	Distance from the scenic spot	.782	.256	14.714	1	.000	2.667
	Expected annual income per capita	.302	.280	1.163	1	.115	3.512
	Whether there are resources invested in tourism projects	.687	.482	9.775	1	.001	1.013
	Whether it is possible to get a loan	.392	.171	40.781	1	.071	3.274
	Risk perception of the head of household	-.892	.171	40.781	1	.000	3.274

3.2 Analysis of results:

It can be seen from Table 3 that among the 13 influencing factors, there are 6 factors whose Sig<0.05 can be entered into the regression equation. These factors have a significant impact on farmers' participation in rural tourism, including the degree of recognition of rural tourism, government support, the number of organized rural tourism training, distance from scenic spots, whether there are resources to invest in tourism projects, and the risk perception of household heads.

3.2.1 Dimensional analysis of own objective factors

In the dimension of its own objective factors, only the recognition degree of rural tourism enters the equation, which has a significant impact on farmers' participation in rural tourism.

Recognition of rural tourism factor B=0.652, it is a positive correlation with the participation of farmers The higher the degree of recognition, the greater the probability of participating in rural tourism. The degree of recognition reflects farmers' subjective perceptions of rural tourism. Most farmers who participate in rural tourism projects believe that rural tourism is an activity with more advantages than disadvantages, while those who do not participate believe that it is not an effective investment project, and cannot bring effective benefits to it.

3.2.2 Dimensional analysis of external environmental factors

In the dimension of external environmental factors, government support, distance from scenic spots, and the number of times of participating in tourism poverty alleviation training entered the equation, which had a significant impact on farmers' participation in rural tourism.

The government support factor B=1.251, which is positively correlated with the participation of farmers. The greater the support, the greater the probability of farmers' participation. The government's support is reflected in various aspects, including the publicity effect of policies, the implementation results of rural tourism projects, and the support for farmers. In general, the greater the government's support, the better the development environment for the development of rural tourism.

The factor B=0.936 for the number of trainings in rural tourism is positively correlated with the participation of farmers. The more training times, the greater the probability of farmers' participation. Due to the occlusion of the rural environment and the difference in their own cognition, many farmers cannot have a deep understanding of rural tourism projects, and they do not have the ability to fully process the relevant information of rural tourism. The government's rural tourism training can help farmers to have a more comprehensive and in-depth understanding of rural tourism, and it can also help farmers better connect and integrate their own resources and rural tourism projects.

The distance from the scenic spot is B=0.782, which is positively correlated with the participation of farmers. The closer the geographical location is to the scenic spot, the greater the probability of farmers participating. The scale of rural tourism projects is limited and the radiation radius is limited. Some farmers who are far away from the scenic spots cannot effectively participate in the tourism projects, and the tourism projects they operate cannot effectively attract tourists.

3.2.3 Dimensional analysis of investment and income factors

Whether farmers have resources to invest in rural tourism B=0.687, which is positively related to their participation in rural tourism. Farmers must have investable human and material resources to successfully participate in rural tourism projects, but lack infrastructure, human resources or funds. Even if farmers with other resources are willing to participate, they cannot find a suitable way to participate and are forced to give up.

The household head's risk perception B=0.892, which is negatively correlated with the behavior of participating in rural tourism. The lower the risk perception, the greater the probability of farmers participating. Many farmers lack understanding and contact with rural tourism, and do not think that it is an effective way to obtain benefits, and even believe that investing in rural tourism projects may eventually lead to economic losses and have greater risks. Therefore, some farmers are unwilling to take risks and spend human and material resources to participate in rural tourism projects.

4. Research Conclusions

(1) The proportion of farmers participating in rural tourism is relatively high. Most farmers have participated in rural tourism projects, but there are still many farmers who have not participated in rural tourism projects.

(2) The per capita annual income of the family, the degree of recognition of rural tourism, the level of government support, the number of rural tourism trainings organized, the distance from the scenic spot, whether there are resources to invest in rural tourism projects, and the risk perception of the head of the household are 7 factors that affect farmers' participation in rural tourism. behavior is significantly affected. Among them, the per capita annual income of households, government support, and the number of times of participating in rural tourism training have the greatest impact.

(3) External environmental factors have a greater impact on farmers' participation in rural tourism. In the dimension of external environmental factors, three factors entered the regression equation, which had a significant impact on farmers' participation in rural tourism, indicating that the external gravitational force had a greater impact on whether farmers participated in rural tourism.

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