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Understanding Farm Households' Participation in Nong Jia Le in China

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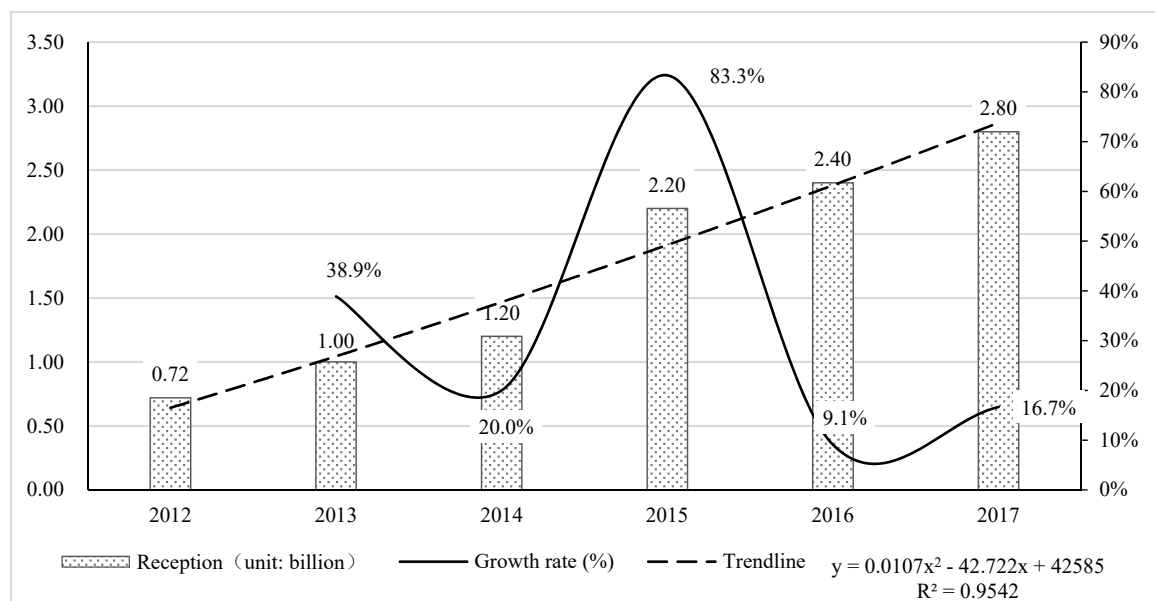
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Abstract: As the dominant form of rural tourism (RT) in China, Nong Jia Le (NJL) has made it possible for local farm households to benefit. In this article, a four-step strategy based on binary logistic regression was introduced to identify the most important factors influencing the participation of farm households in NJL. Next, a comparative study based on data from two NJL communities was conducted to test the approach and identify the most important influential factors as well as the differences. The results showed that the approach could identify the optimal model and the most influential factors in different rural communities. The comparative study indicated that for Pinglou Village, the most influential factors were "education years" and "gender ratio", while in Baozi Village, the three most influential factors were "education years", "consumption level", and "land area". Implications were put forward to improve the level of participation and hospitality of NJL.

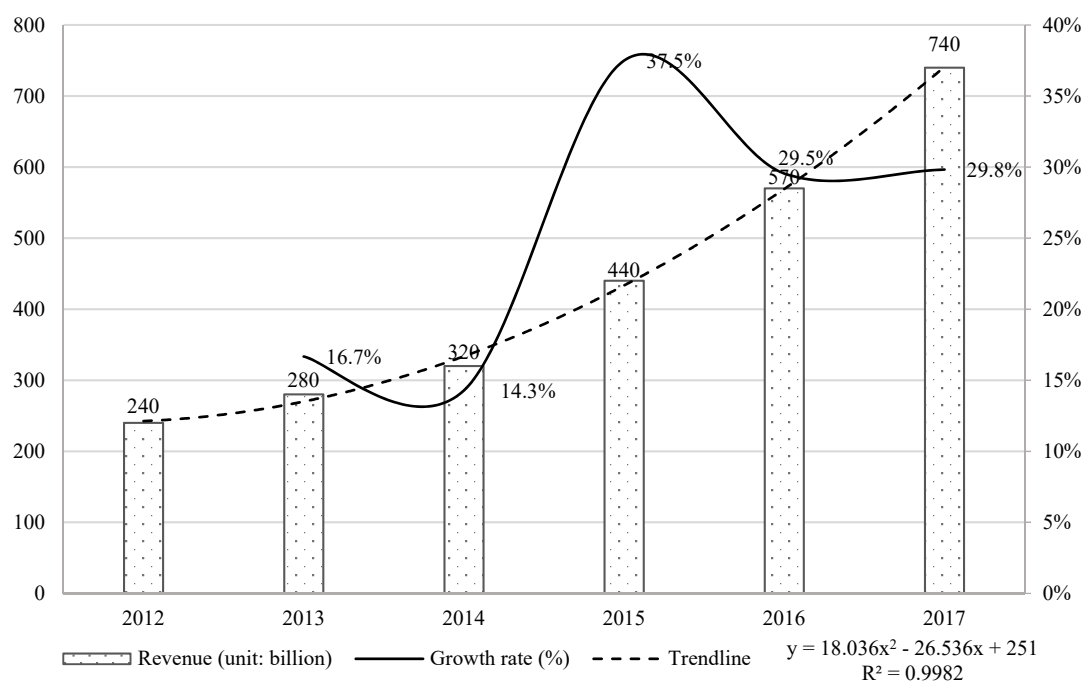**Keywords:** Nong Jia Le; farm household; binary logistic regression; influential factor

1. Introduction

China remains a typical agricultural society in terms of the size and proportion of its rural population (674 million, 50.32% of the total [1]). The social, economic, cultural, and environmental development of rural areas has always been the top priority of the Chinese government. Though unremitting efforts have been made by all circles of society, many Chinese rural communities have declined for reasons that include mobility and technology, poverty, biased policy, and inadequate land management [2].

Rural tourism (RT) is not only a potential remedy for the decline of traditional agriculture and rural communities, but also a means of economic, social, and cultural development and the preservation of natural areas [3–6]. Perceiving the problems of rural communities and the rapid development of RT, the Chinese government has invested many resources (e.g., promotional activities) to stimulate RT [7]. As a result, the reception and the revenue of RT greatly increased from 2012 to 2017 despite some fluctuations (see Figure 1; Figure 2).

Figure 1. The annual reception of rural tourism (RT) in China from 2012 to 2017 [8].

Figure 2. The annual revenue of RT in China from 2012 to 2017 [8].

The initial and dominant form of Chinese RT [9,10], Nong Jia Le (NJL) is invested and operated by individual farmers and farmer's families, providing rustic meals (home-made meals) and accommodation (farmhouse) services and amusements for tourists and vacationers during the weekend and holidays [7]. NJL has been proven to be an effective way to generate income sources, improve the livelihood of rural farm households, and reduce poverty. At the end of 2014, there were more than 1.5 million NJL in China with an annual reception and revenue of 1.0 billion and 300 billion Chinese Yuan (CNY), respectively, indicating that NJL benefited 30 million farmers [11]. In 2015, 2016, and 2017, the number of NJL increased to 1.93, 2.0, and 2.2 million, respectively, with average annual growth rate of 14.1% [8].

NJL has the potential to create economic, social, and cultural benefits, yet the achievements of this industry have not been provided. In China, tourism is one of the highest marketization degree

fields [12]. Under the control of liberal economics, RT profit has concentrated on external capital and falls into the hands of rural elites who already possess political, economic, and social capital [13,14]. Therefore, it is hard for most local farm households to improve themselves by becoming NJLs, in which case the wealth gap among farm households becomes more serious with the development of local NJLs.

The widening disparity between the rich and poor has led to resentment of the rich and social instability. The bonds between rural residents have weakened and the sustainable development of rural communities has declined. Income disparities in China's RT communities have started to draw attention. Empirical studies [15,16] showed that with the development of RT and NJL, the widening gap between the rich and poor has become quite serious in Chinese rural communities; their Gini coefficients, which were higher than 0.4, signified serious disequilibrium. As a form of rural tourism, NJL has the potential to solve some of the socio-economic problems of rural areas with the support of the community and the local government.

Despite the rising research on RT and NJL, a few research gaps are found in the literature. First, current trends of resource use and control for supporting NJL are based on administrative assumptions instead of targeting the most important factors that affect the participation of farm households in NJL [17]. Previous studies have found that development policies have failed to focus on the important distributional attributes associated with amenities and tourist activity [18]. Therefore, exploring the factors that support the participation of farm households in NJL is an indispensable way to balance tourism profit among farm households and realize the sustainable development of rural communities. Second, although some researchers have highlighted farm household participation in RT [19–21], there have been few quantitative studies on the issue, not to mention the differences among different rural communities. Due to the heterogeneity characteristics of community, various community groups (e.g., farmers, businesses, local government) demonstrate distinct attitudes about supporting sustainable tourism development [22,23]. The lack of scientific research on this topic has resulted in failed efforts to improve participation and the quality of hospitality.

To fill this research gap, this study will (1) propose an approach for identifying and evaluating the most influential factors affecting participation in NJL, and (2) apply this approach to two NJL communities to identify the most influential factors and their differences. First, with regard to the uniqueness of NJL, the lack of specialized studies about the factors that influence families to participate in NJL may cause supporting policies to lose their foundation and dissociate from the true needs of farm households. Second, the factors discussed above are specific to niche communities, which restricts how relative results are applied to other rural communities. The main reason for this is that rural communities have their own characteristics marked by history, the environment, tourism resources, economy, and ideology [7], and participation method is comparable, depending on the situation in which it happens [24]. Therefore, the focus on influencing factors should switch to an exploratory approach that can identify the most important influential factors in different NJL communities and compare the differences between the factors instead of simply applying empirical results to local communities.

Two NJL communities, one in a developed province (Shandong Province) and the other in an underdeveloped province (Gansu Province), were the basis of this comparative study. Both provinces have traditionally invested a great deal of resources into supporting RT and NJL. By 2016, the Gansu Province had received 110 million CNY (approximately United States Dollar (USD) 16.56 million) from the government to reduce poverty [25]. In the Shandong Province, the accumulated funds for RT development reached 620 million CNY (approximately USD 93.33 million), which have supported 64,000 farm households participating in NJL since 2013 [26].

A four-step strategy was used to determine and evaluate the factors affecting participation in NJL: (1) establish a system of potential influencing factors according to the characteristics of a rural community and farm household; (2) collect data from a household survey instead of random sampling; (3) use a binary logistic regression model to screen variables stepwise; and (4) identify the optimal model and influencing factors according to the tests of fitting degree and the analysis of prediction

accuracy. This study will offer short- and long-term practical suggestions to increase the number of farm households participating in NJL.

This paper is divided into five main sections. Section 2 introduces the background of the beginning of this study. Section 3 presents a test model and defines study cases. Section 4 reports empirical results. Section 5 discusses implications from the results of this study. Finally, Section 6 outlines plans for future development and research.

2. Literature Review

2.1. Nong Jia Le: The Principal Form of Rural Tourism in China

Since the early 1990s, when it carved out a career with the first cluster of NJL in Chengdu, Sichuan Province [9], NJL tourism has become a popular and dominant rural tourism product for the mass market it serves from a market perspective [7,9,10,27].

At its beginning stage, NJL tourism was based on offering board and lodging with rooms being rented in the owner's private home [7], which made it difficult to distinguish an NJL from a bed and breakfast (B&B) in Europe and North America. As a traditional industry, B&Bs have a clear definition [28] and have long been popular worldwide [29].

Benefiting from the extension of vacations and the increasing and diversifying demand of urban residents, the characteristics and the nature of NJL have changed to be more and more different from B&Bs. Table 1 provides a side-by-side comparison of their characteristics.

Table 1. Differences between bed and breakfast (B&B) and Nong Jia Le (NJL).

B&B	Nong Jia Le
Usually serve breakfast	Usually serve all meals, snacks, and beverage
Accommodation is usually provided in a family (private) home where spare rooms are rented to supplement income and meet people	No difference
Advertised mostly through word of mouth	Advertised through all kinds of media
Usually offers 4–5 rooms	The number of rooms depends on the room and preferences of the farm household
The business is usually not the owner's sole or primary source of income	The business may be half-time or full-time
Comply with zoning laws, but are often not extensively regulated due to their small size	Often do not abide zoning laws
Owner/manager lives in the house or on the property	No difference
Bathroom facilities may or may not be ensuite and/or private	Bathroom facilities are usually ensuite and/or private
Guests generally share the public areas with the host family	No difference

Note: The characteristics of B&B [27].

2.2. Comparison of B&B and Nong Jia Le

According to Table 1, a B&B has only three similarities to an NJL: (1) accommodation is in a family home; (2) the owner lives in or on the property; and (3) guests share public areas with the host family. However, in light of the exclusive aspects of the nature of NJL, there are three differences between an NJL and a B&B. First, an NJL is usually a holiday or weekend destination. Second, an NJL provides abundant leisure activities such as "having fresh food, tasting green vegetables, experiencing traditional courtyard living, doing hard farming work, enjoying farmers' amusements, and purchasing

indigenous products from farm families" [30] instead of simply breakfast and a room. Third, a stay in an NJL can range from several hours to a couple of days. Most tourists only stay in a B&B overnight.

In addition, NJL is often compared with RT due to their commonalities. In some cases, NJL and RT can be used interchangeably given their farm-based nature. However, these two concepts are not identical for a number of reasons. Based on this approach, rural tourism is a broader term that comprises not only just farm-based tourism, but also nature activities, ecotourism, heritage tourism, sport tourism, etc. To win business for RT, Wilson et al. [31] highlighted the importance of community and rural tourism entrepreneurs for successful rural tourism development. Their study identified the most important elements in the planning process as: (1) a complete tourism package; (2) good community leadership; (3) support and participation of local government; (4) sufficient funds for tourism development; (5) strategic planning; (6) coordination and cooperation between businesspersons and local leadership; (7) coordination and cooperation between rural tourism entrepreneurs; (8) information and technical assistance for tourism development and promotion; (9) good convention and visitors bureaus; and (10) widespread community support for tourism.

On the other hand, NJL, known as "farmhouse joy", has been developed to fit the needs of both urban residents and privately-owned small enterprises among Chinese farmers [7]. Compared to other forms of RT, NJL properties are usually a small-scale lodging facility owned and run by a local, individual farmer household [10]. These facilities provide a special focus on rural–urban encounters, social-boundary making, and identity between the hosts and the guests. Therefore, NJL has unique characteristics that differ from B&Bs or other forms of RT. This difference requires researchers to consider the RT context when exploring factors that affect participation in and support for NJL development.

2.3. Farm Household Participation in Nong Jia Le

It is well-known that community participation is vital to the sustainable development of tourism and local communities [32]. In 2002, the World Health Organization (WHO) proposed that public participation in planning and decision making is a human right since the processes and decisions are made based on public interest. Tosun [33] believed that the participatory development approach would facilitate the implementation of principles of sustainable tourism development by creating better opportunities for local people to gain larger and more balanced benefits from the tourism development taking place in their localities. Milewa et al. [34] enlightened that tourism planning occurred from approaches to safeguard locals from the effect of tourism planning and gain the benefits of tourism development. In addition, some scholars regard the host residents' perceptions on the impacts of tourism as a critical predictor of their support for and participation in tourism development, and the achievability of sustainable tourism development and management [21,35].

Among the studies on community participation in tourism, the perceived impact of tourism development on rural communities has been discussed [36–38] where the positive economic, social, and environmental influences are mainstream, especially in the domains of tourism planning and benefits sharing, while negative influences are not neglected [39]. For example, using complexity theory and fuzzy-set qualitative comparative analysis, Olya et al. [40] conducted research in three communities in Pamukkale, a world heritage site in Turkey. Their study revealed that each community group demonstrated a unique method of support for sustainable tourism development behaviors, indicating specific strategies must be developed for community-based management. This result reflects other recent studies [22,23] on the effects of community attachment and community involvement on stakeholders' support for tourism development in other countries (e.g., Iran).

Unfortunately, studies on community participation have been assessed in terms of theory. There is no conceptual framework for rural tourism [33] in which domain community participation in RT is featured as multifaceted, intertwined, and progressive [24]. A gratifying trend driving community participation in RT to a more in-depth household scale has shed light on improving relative studies and practices. For example, Prabhakaran et al. [24] suggested that "while involvement and participation of

communities in the tourism industry can be viewed in the decision making process and in the sharing of tourism benefits, community participation through employment brings more economic benefits directly to the household level". Biddulph [41] investigated three villages in the rural periphery of a major tourist destination in Cambodia and claimed that the policy on poverty and tourism should be informed by an understanding of the rural households' existing livelihood portfolios and the strategic contingent decisions that shape them. In Indonesia, the benefits from tourism have been monopolized by local elite households in rural areas [14].

There is no doubt that the study contents and methods of community participation in RT and NJL will be richer and deeper with the development of RT. The research on community participation should proceed from the level of the farm household because it is the unit of the rural community.

2.4. Factors Influencing Farm Households' Participation in Nong Jia Le

Studies on factors affecting farm household participation in RT are scattered in other studies. Some studies have used social exchange theory to explain the factors that affect the attitudes of residents toward and support for RT [42,43]. For example, Avila-Foucat and Rodríguez-Robayo [44] showed four common variables distributed between capitals and specified that the average household age, environmental consciousness, characteristics of the land, membership or participation in an organization (cooperative), and government transfers were determinants of a household's diversification into wildlife tourism. Jaafar et al. [20] investigated tourism-related small business entrepreneurs from RT communities and discovered that most of them used their own savings to establish and maintain their businesses, sustaining operations and staffing levels throughout the year despite seasonal slumps in tourist numbers, marginal profits, and a lack of tourism-specific knowledge and skills. This theory implies that individual's perceptions of exchange can be different depending on how the outcome of the process is viewed [45].

Additionally, more recent studies [22,23] have applied complexity theory to understanding community participation and support for tourism development because social exchange theory assumes residents' passive and reactive roles, which may or may not always explain the association between residents' perceptions and their support for tourism development [46,47]. Complexity theory, on the other hand, argues that a combination of antecedents, instead of the net effect of all determinants, should be considered when examining community support for tourism development [22,23]. Under this premise, tourism scholars may attempt to glean factors associated with farm household participation in tourism development. Yang et al. [48] and Yu et al. [49] specified the farm households' participation in decision-making and willingness, the farm households' adaptation to RT development, and the distribution of tourism profits among farm households. Among the relative studies, the most frequently mentioned factors in the development and management of RT are the operators' education, training, capital, labor, and gender [19,21,50], which has laid the foundation for understanding the influential factors in terms of NJL.

3. Methodology

3.1. Model Formulation

A binary logistic regression model was constructed to screen the potential influencing variable(s) and identify the optimal model. This model had two functions to: (a) determine the occurrence probability via the stepwise iteration of independent variables to identify the most important factors and (b) find the optimal model affecting the occurrence probability by screening the independent variables one at a time.

Although this method has found wide application in the medical and ecological fields, especially in disease discrimination and habitat prediction, it has not been applied to RT. Some studies have

combined the binary logistic regression model and tourism [21,51–53]. The equation of binary logistic regression is as follows:

$$P = \frac{\exp(B_0 + B_1 X_1 + B_2 X_2 + \cdots + B_i X_i)}{1 + \exp(B_0 + B_1 X_1 + B_2 X_2 + \cdots + B_i X_i)} \tag{1}$$

where *P* is the occurrence probability; *B* is the regression coefficient; and *X* is the influencing factor.

Based on this, a system was built to represent the potential factors which may affect the participation of farm households in NJL. Then, a screening model based on binary logistic regression was applied to evaluate those factors step by step because the result of the participation of a farm household in NJL is a binary viable (0 or 1). To meet the model's demands, data was collected by a comprehensive household survey (data covers all farm households) instead of random sampling.

According to the results of the goodness-of-fit tests (including the likelihood ratio test and Hosmer and Lemeshow test) and the analysis of the prediction accuracy of the steps, the optimal model and influencing factors of the two cases were identified. Based on the results, the differences in the influencing factors of both villages were discussed and some short- and long-term recommendations were offered to increase the participation of farm households and improve the quality of NJL hospitality.

3.2. Study Sites

3.2.1. Case 1: Pinglou Village

Pinglou Village (36°42′27″N, 117°50′20″E and 108 m above sea level) is located in the Zhoucun District, Zibo, Shandong Province, China (Figure 3). Due to its country setting and proximity to the Wenchang Lake tourism resort (3.0 km) and downtown Zibo (6.7 km) with a resident population of about 4.642 million [54], Pinglou Village is in an advantageous location for NJL. Fourteen households, or 26.92% of the total, participate in NJL (Table 2).
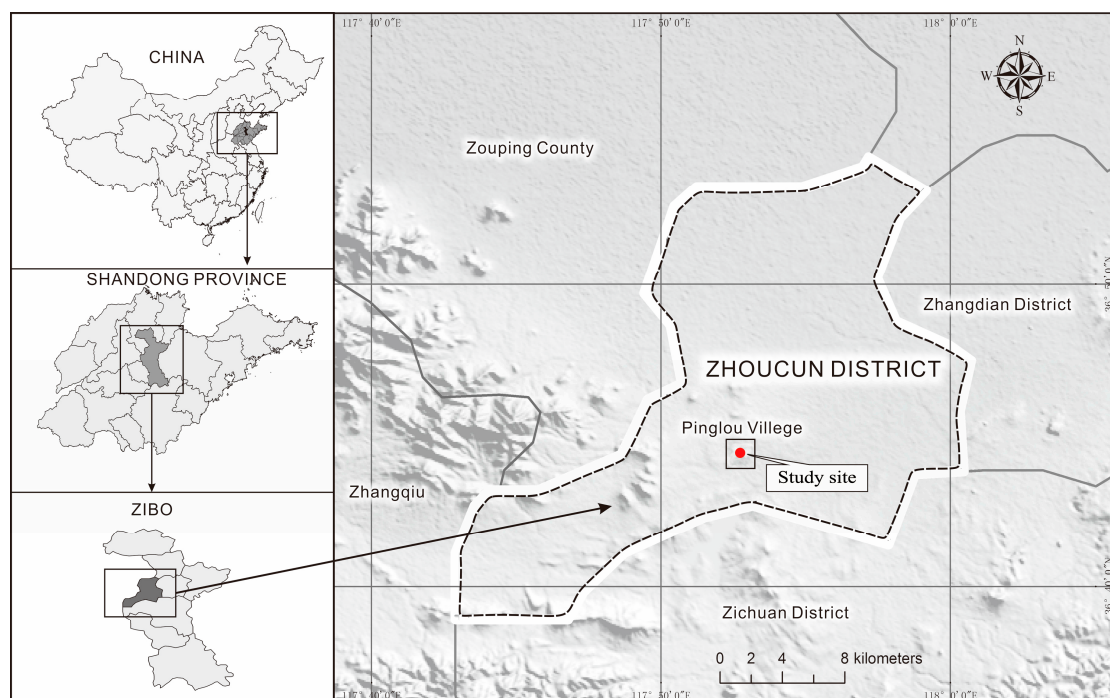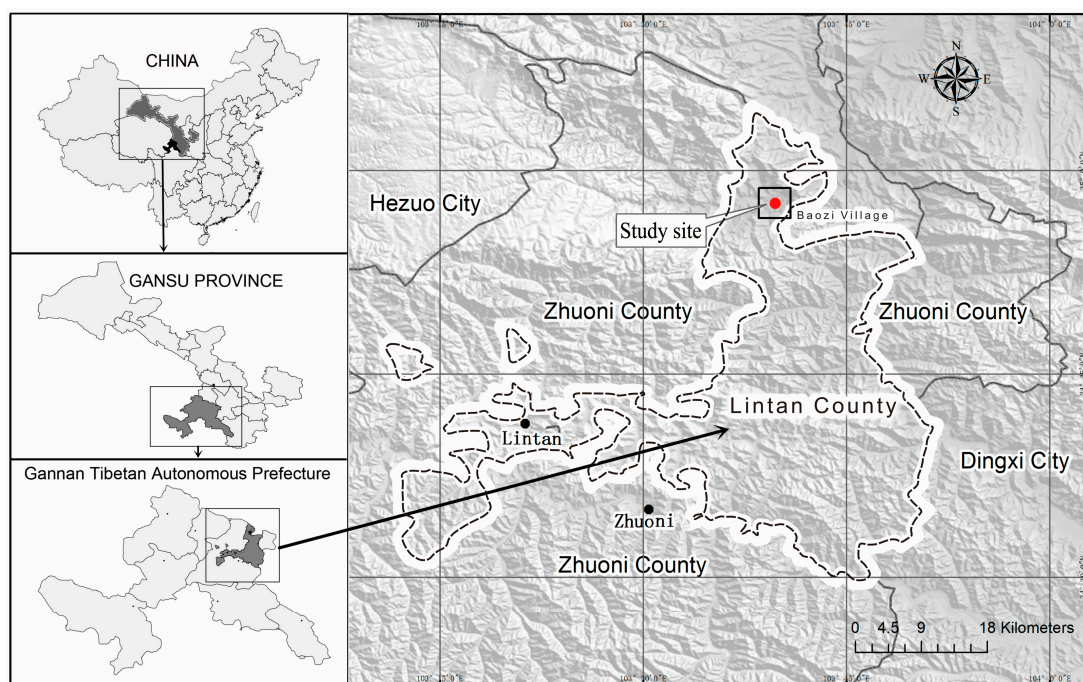

Figure 3. Location of Pinglou Village in China.

Table 2. Descriptive statistics of farm households in Pinglou Village and Baozi Village.

	Minimum	Maximum	Mean	Standard Deviation
Pinglou Village (N = 52)				
Education years per person	4.50	19.50	8.51	3.21
number of rooms	3	10	5.29	1.19
% of males	0.00%	100.00%	44.87%	23.46
number of family member	1	5	2.88	1.10
Land area	466.67 m^2	3733.33 m^2	1726.67 m^2	1.41
% of young workers	0.00%	100.00%	0.38%	0.36
number of farmers	0	4	2.00	1.07
Baozi Village (N = 43)				
Education years per person	0.00	12.00	6.33	3.66
number of rooms	7	22	12.33	2.85
Proportion of males	0.00%	100.00%	51.43%	22.58
number of family member	2	6	4.37	1.05
Land area	0.00 m^2	7999.92 m^2	2620.00 m^2	2.91
% of young workers	25.00%	100.00%	0.00%	0.22
number of farmers	1	5	2.56	1.03

3.2.2. Case 2: Baozi Village

Baozi Village (34°57′34″N, 103°39′31″E and 2211 m above sea level) is located in the northeast part of the Qinghai-Tibet Plateau and mountains cover the total area (Figure 4). The village is part of the Lintan County (a national-level poverty-stricken county), Gannan Tibetan Autonomous Prefecture, Gansu Province and is in the central zone of the Yeliguan scenic area (a National Scenic Area) whose visitors numbered about 768.6 thousand in 2016 [55]. Baozi Village is a mountain community and has the advantage of close proximity to the tourist conference center of a scenic area. Within this area, 25 households, 59.52% of the total, have participated in NJL (Table 2). Benefiting from NJL, Baozi Village is no longer impoverished.

Figure 4. Location of Baozi Village in China.

3.3. Instrument of Variables

Using variables in the literature and the characteristics of NJL and Chinese farm households, we constructed a system of potential influential variables, starting with "human resource", "participation willingness", "housing condition", and "capital" (Table 3).

Table 3. Potential variables used for evaluating the key influencing factor(s).

	Variables	Definition
1. Human resource	1.1. Gender ratio (the proportion of males)	Continuous
	1.2. Proportion of young and middle-aged workers	Continuous
	1.3. Education years (of household members)	Continuous
	1.4. The number of family member	Continuous
	1.5. Special training	Binary
2. Willingness	2.1. Participate willingness	Equal interval
3. Housing condition	3.1. The number of rooms	Continuous
	3.2. Quality of house	Equal interval
4. Capital	4.1. Land area	Continuous
	4.2. Consumption level	Equal interval

NJL belongs to the RT industry. Researchers have noted the importance of human resources and the willingness to participate in RT and NJL [19–21]. To explore human resources, we subdivided "human resource" into four sub-factors: "gender ratio", "proportion of young and middle-aged workers", "education years (of household members)", and "special training", which have been discussed qualitatively by the researchers. For "participation willingness", a five-point Likert scale was used.

As far as NJL is concerned, the "housing condition" is important [56,57], as there needs to be enough space to provide guest accommodation, dining, and recreation. Theoretically, the larger the house, the more rooms it has. However, in China, the residential acreage of farm households is uniformed by law.

According to the 1987 Law of Land Administration of the People's Republic of China and the 2015 Regulation on the Implementation of Land Administration Law of PRC in Shandong Province, the residential land area of a farm household is 132 m^2 in flat area. This means that the residential land area does not significantly affect the participation probability of farm households whose land area is constant in the same rural community. Therefore, we divided "housing condition" into two sub-factors: "number of rooms" and "quality of house".

It is self-evident that capital is important for NJL as well as other forms of RT [20,41,50] as farm households need capital to decorate their guest rooms, renovate or add special facilities, and buy food. Unfortunately, due to Chinese tradition, few farmers willingly disclose financial information. Instead, we used "land area" to reflect a farm household's fixed assets. For current assets, "consumption level" was an applicable composite index because most Chinese farmers are used to spending based on their income.

3.4. Data Collection and Pre-Processing

To improve the research validity, a household survey was administered in July and August 2016. Other than random sampling, the comprehensive household survey had satisfactory accuracy by covering all farm households in the villages. However, this kind of data collection was only for small-scale cases given the long survey duration and building a proficient survey team. It took two months to complete the survey because the household surveys were administered three times in every village due to the absence of some farm households during the surveys.

In the questionnaire, variables were incorporated into structural questions. To eliminate the influence of dimension and magnitude, the raw data were preprocessed. The continuous data were standardized using Equation (2):

$$X'_j = \left(X_j - \underset{1 \le j \le n}{Min} X_j \right) / \left(\underset{1 \le j \le n}{Max} X_j - \underset{1 \le j \le n}{Min} X_j \right) \tag{2}$$

where X_j is the original value of index j, X'_j represents the standardized value of index X_j, and $\underset{1 \le j \le n}{Max} X_j$ and $\underset{1 \le j \le n}{Min} X_j$ denote the maximum and minimum value of index X_j, respectively.

Theoretically, there is some correlation between participation probability and the variables. However, under the complicated interaction of the variables, screening the most influential factors was the key point of this study. Consequently, using the data from the household survey, we established two modeling databases of the villages and then conducted forward stepwise regression to fit the prediction model. The entry and removal value of probability for the stepwise were 0.05 and 0.10, respectively, and the maximum number of iterations was 20. All computations were performed by IBM SPSS (Statistical Package for the Social Sciences) (version 20.0.0 for Windows).

4. Results

4.1. Variables in the Equations

The binary logistic regressions of the two cases were carried out two steps and three steps, respectively. Variables in the equations are shown in Tables 4 and 5. According to the results, for Pinglou Village, two variables entered the equations. "Education years" is the first variable entered into the equation in step 1 and "gender ratio" is the second variable entered into the equation in step 2. For Baozi Village, the three variables were "education years" (step 1), "consumption level" (step 2), and "land area" (step 3).

Table 4. Variables in the equations (Pinglou Village).

		Coefficient	Standard Error	Degree of Freedom	Significance
Step 1	Education years	0.449	0.166	1	0.007
	Constant	−13.970	5.189	1	0.007
Step 2	Education years	0.446	0.172	1	0.010
	Gender ratio	0.125	0.062	1	0.042
	Constant	−19.649	7.517	1	0.009

Table 5. Variables in the equations (Baozi Village).

		Coefficient	Standard Error	Degree of Freedom	Significance
Step 1	Education years	0.544	0.167	1	0.001
	Constant	−2.727	1.074	1	0.011
Step 2	Education years	0.590	0.190	1	0.002
	Consumption level	1.586	0.745	1	0.033
	Constant	−8.012	2.919	1	0.006
Step 3	Education years	0.673	0.220	1	0.002
	Consumption level	1.839	0.908	1	0.043
	Land area	0.462	0.236	1	0.050
	Constant	−10.810	3.951	1	0.006

The significance of the variables and constants in all steps was smaller than 0.050 (in Table 5 in step 3, the significance of "land area" was 0.049892). Therefore, the two models for Pinglou Village and three models for Baozi Village met the statistical requirements. Since the binary logistic regression

was stepwise and non-linear fit, several steps were in line with the significance requirement. Therefore, the goodness-of-fit test and the analysis of predictive accuracy of the steps were necessary to identify the optimal model of the two cases.

4.2. Goodness-of-Fit Tests

This study used the Likelihood Ratio (LR) test and Hosmer and Lemeshow (HL) test to test the goodness-of-fit. The former was used to examine whether the fitting degree of the steps and models met the statistical requirements. The latter compared the fitting level among the steps and models. As a result of the LR test shown in Table 6, the significance of all steps and models was below 0.05, indicating that the fitting degree of all of the steps met the statistic requirements.

Table 6. Results of the Likelihood Ratio test.

		Chi-Square	Degree of Freedom	Significance
Pinglou Village				
Step 1	Step	45.207	1	0.000
	Block	45.207	1	0.000
	Model	45.207	1	0.000
Step 2	Step	7.179	1	0.007
	Block	52.387	2	0.000
	Model	52.387	2	0.000
Baozi Village				
Step 1	Step	20.753	1	0.000
	Block	20.753	1	0.000
	Model	20.753	1	0.000
Step 2	Step	6.145	1	0.013
	Block	26.898	2	0.000
	Model	26.898	2	0.000
Step 3	Step	4.792	1	0.029
	Block	31.690	3	0.000
	Model	31.690	3	0.000

Based on the results of the HL test in Table 7, for Pinglou Village, the significances of step 1 and step 2 were all higher than 0.7 (the significance of HL should be bigger than 0.7, and the higher it is, the better the fit). Due to the smaller chi-square and the larger significance, the fitting degree of step 2 was better than that of step 1 and the optimal model was from step 2.

Table 7. Results of the Hosmer-Lemeshow test.

Step	Chi-Square	Degree of Freedom	Significance
Pinglou Village			
1	0.532	4	0.970
2	0.531	8	1.000
Baozi Village			
1	1.408	3	0.704
2	7.348	7	0.394
3	1.639	8	0.990

The HL test result of Baozi Village was a little more complex than that of Pinglou Village. The fitting degree of step 2 was the worst because of its highest chi-square (7.348) and lowest significance (0.394, far less than 0.7). As for the results of step 1 and step 3, the significance of step 3 (0.990) was better than that of step 1 (0.704); however, the chi-square value of step 3 (1.639) was

larger than that of step 1 (1.408). Therefore, the analysis of predicted accuracy is essential to comparing the fitting degrees of step 1 and step 3 and identify the optimal model.

4.3. Analysis of Predicted Accuracy

Table 8 shows the predicted accuracy results of the steps (the cut value was 0.500). In the case of Pinglou Village, the percentage correct of "0" of step 1 and step 2 was the same (97.4%), while the percentage correct of "1" (92.9%) and overall percentage (96.2%) of step 2 were all higher than those (78.6%, 92.3%) of step 1. Thus, the model from step 2 was the optimal model (the result was consistent with the HL test of the two models).

Table 8. Prediction accuracy of the steps of the two cases.

Observed		Predicted		
		0	**1**	**Percentage Correct**
Pinglou Village				
Step 1	0	37	1	97.4
	1	3	11	78.6
	Overall Percentage			92.3
Step 2	0	37	1	97.4
	1	1	13	92.9
	Overall Percentage			96.2
Baozi Village				
Step 1	0	10	6	62.5
	1	2	24	92.3
	Overall Percentage			81.0
Step 2	0	11	5	68.8
	1	1	25	96.2
	Overall Percentage			85.7
Step 3	0	13	3	81.3
	1	2	24	92.3
	Overall Percentage			88.1

As for Baozi Village, although the percentage correct of "1" of step 1 and step 3 was the same (92.3%), the percentage correct of "0" (81.3%) and overall percentage (88.1%) of step 3 were all higher than those (62.5%, 81.0%) of step 1. Therefore, the fitting degree of step 3 was the best and the equation from step 3 was the optimal model.

4.4. The Optimal Models and Influencing Factors

According to the test of fitting degree and the analysis of predicted accuracy, the optimal model of Pinglou Village is Equation (3):

$$P = \frac{\exp(-19.649 + 0.446X_1 + 0.125X_2)}{1 + \exp(-19.649 + 0.446X_1 + 0.125X_2)} \tag{3}$$

where X_1 is education years and X_2 is gender ratio.

For binary logistic regression, the order of variables entering into the optimal model represents the importance of the variables. Therefore, for Pinglou Village the most influential factor of farm household participation in NJL was "education years" because it was the first variable entering the optimal model. The coefficient of the variable was positive (0.446), meaning that the farm household's participation probability increased with the length of education years of the total household members. The secondary important variable was "gender ratio". The coefficient was positive (0.125) too, which means that the participation probability increased with the proportion of males in the farm household.

For Baozi Village, the optimal model of predicted probability is Equation (4):

$$P = \frac{\exp(-10.810 + 0.673X_1 + 1.839X_2 + 0.462X_3)}{1 + \exp(-10.810 + 0.673X_1 + 1.839X_2 + 0.462X_3)} \tag{4}$$

where X_1 is the education years; X_2 is the consumption level; and X_3 is the land area.

Of all variables, "education years" had the strongest correlation with participation probability, because it is the first variable entering the model. Its coefficient was positive (0.673), which explains that the participation probability increased with the length of education years. The second variable entering the optimal model was "consumption level" and its coefficient was 1.839, meaning that the participation probability of the farm household increased with consumption level. The last variable was "land area", where the coefficient was 0.462, which had a positive correlation to the probability of participation.

5. Discussion, Implications, and Conclusions

According to the results of the two NJL communities, "education years" and "gender ratio" were the most influential factors for Pinglou Village and "education years", "consumption level", and "land area" were the most influential factors for Baozi Village. Among all of the factors, "education years" was the only common factor in the two NJL communities and was also the most important factor because it was the first variable entering the equations in both cases. The coefficients of "education years" are greater than 0 which indicates a positive correlation between the probability of farm household participating in NJL and the length of household members' education years.

This result showed that NJL is a labor-intensive industry where the education domain and work experience have long been noticed as the two most important human capital variables [58]. As we all know, it is difficult to improve the farmers' education during a short period. Therefore, the Chinese government has a natural responsibility to wage a long-term battle for rural education and dramatically increase its investment in rural education.

In both cases, work experience did not show any importance as none of the farm households in the two villages had previous experience of NJL. This result departs from the literature, which indicates that farmer experience, knowledge, and skills are critical in their decisions to diversify into tourism [59]. However, this result does not mean that work experience has no effect on farmer participation in NJL because each rural community has its unique characteristics, which would make its result deviate from the two cases.

In fact, during the household surveys, many farm households showed a strong desire for management experience of other successful NJL products and guidance from local tourism administrations and associations, implying that "work experience can be a predictor of participation and hospitality quality in other villages" [7]. This suggests that local tourism administrations and associations should periodically offer farm households special NJL training courses in positioning, human resource management, cuisine, network marketing, etiquette, and environmental sanitation to increase their involvement and the quality of their hospitality.

One noteworthy finding is the influence of gender ratio. In Pinglou Village (in the Shandong Province), "gender ratio" was one of the most important influential factors (a positive coefficient indicates that the more males in farm household, the higher the participation probability is), while it did not enter the optimal model for the Baozi Village (in the Gansu Province). A correlation analysis between "whether or not participation in NJL" and "gender ratio" showed the distinction of the two villages (see Table 9). In Pinglou village, "whether or not participation in NJL" and "gender ratio" showed significant correlation at 0.01 level, while there was no significance in Baozi village.

Table 9. The correlation between "whether or not participation in NJL" and "gender ratio".

		Pinglou Village		Baozi Village	
		WNPN	GR	WNPN	GR
WNPN	Pearson correlation	1	0.476 **	1	0.162
	Significance		0.000		0.299
GR	Pearson correlation	0.476 **	1	0.162	1
	Significance	0.000		0.299	

Note: (1) WNPN represents "whether or not participation in NJL"; (2) GR represents "gender ratio"; (3) ** represents significant correlation at 0.01 level (bilateral).

The reason for this result can be attributed to the disparity of regional economic development. In the Shandong Province, due to the rapid economic development and urbanization, most rural young males are migrating to the cities while in the Gansu Province, which belongs to underdeveloped regions, there are insufficient work opportunities for farmers in the cities and most male laborers are still engaged in traditional agriculture.

This result reflects the role of gender in the development of NJL and RT in China. There are some studies on women's involvement in tourism [60–62] in which women's important roles as "preserver of rural culture, sustainer of rural lifestyle, generator of family income, unifier in society, and core promoter of rural tourism were determined" [63]. As for NJL, Ling et al. [63] suggested that women have become "rural village keepers" and are an asset for preserving local culture and lifestyles in NJL communities. It seems that women play an indispensable role during the development of NJL, RT and tourism.

However, most previous studies were based on case studies, and Chinese communities are "constrained by Chinese male-dominated practices" [63]. Therefore, during the development of NJL, RT, and tourism, the roles of men and women should be re-examined according to the situation of each village rather than applying the experience to other villages directly.

To compensate for the shortage of male labor, local administrations should organize farm households to establish cooperative organizations that can not only make full use of an idle labor force, but also use the profits to revitalize their communities [50]. Tourism administration and associations can also steer unemployed and seasonal workers such as college students towards NJL communities during the peak tourist season.

In Baozi Village, the other two factors that affected participation in NJL were "consumption level" and "land area", which are principal indicators for Chinese farm household's capital. However, these two factors did not affect the optimal model for Pinglou Village. The reason can be attributed to the different development levels of the regional economy. As mentioned in 3.2 Study sites, Pinglou Village is located in a relatively developed region in which farm households' income and living conditions are satisfactory due to multiple revenue sources. However, Baozi Village is located in a national-level poverty-stricken county where most villagers' have an unstable income concentrated on traditional single grain crop cultivation, and living conditions make it difficult to satisfy tourists' demand. Therefore, the disparity of the rich and poor and the importance of "Capital" is significant in Baozi Village.

During household surveys in Baozi Village, we also found that the main reason that farm households applied for loans was to repair and improve their rooms and facilities. As a result, the local government should enact policies to guide banks, non-governmental organizations (NGO), and commercial companies to offer interest-free or low-interest loans for local farm households. According to the experience of other villages [64], such loans from commercial banks and micro credit companies improved the participation of farm households and hospitality.

To sum up, though "human resource" and "capital" did work in the two villages and confirmed some of the scholars' findings [65], the significance of influencing factors varied according to the characteristics of the villages. These findings remind us that decision-making and policies to support farm household participation in NJL should be based on the most influential factors of the respective village instead of the results of other villages.

6. Limitations and Future Research Directions

Caution should be exercised when interpreting the results of this study. The sample for this research was based on the perceptions of farm households in two villages. Future research is needed to cross-validate the study in different settings.

Although binary logistic regression is one of the most popular methods for analyzing binary variable in the social sciences (i.e., sociology, psychology, demography, politics, economics, and medical science) [66], other methods of analysis (e.g., fuzzy set Qualitative Comparative Analysis (fsQCA)) should be taken into consideration for future research. Comparing the results derived from different analytical methods could produce interesting and meaningful arguments in view of the lack of studies investigating farm households participating in NJL and RT. In addition, with the increase of case studies, it would be important to use the Common Method Bias (CMB) test (Harman's One-factor) to check the potential threat, or CMB, in the future.

Supporting farm household participation in NJL has proven to be a predominant way for locals to diversify their income sources and share in RT profit in China. However, current support policies often miss their objectives due to a lack of scientific research into the factor(s) that influence farmer households to participate in NJL. This lack of research is a primary explanation for the increasing income disparity between the rich and poor in Chinese RT communities. In our study, the four-step strategy, based on binary logistic regression, identified and evaluated the most influential factors for farm households participating in NJL in two villages. Further research is needed to compare influencing factors and examine the spatial scale of policies in order to increase the participation of farm households and improve the quality of their hospitality.

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