
Exploration of the Charm Factors of Ecological Tourism

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Abstract

With the development of tourism, ecological tourism is increasingly popular. There are countless ecological tourist areas which have high similarity and unreasonable development are being developed every year. It not only does not meet diverse tourist needs, but also waste a lot of social and natural environmental resources. How to develop ecological tourism accurately and effectively not only for economic benefits, most important for reducing the waste of environmental resources. So, to enhance the effective development of ecological tourism, Miryoku Engineering was used to abstract the charm factors of it. Tea ecological tourism as a representative case to study. Firstly, the evaluation grid (EGM) method of Miryoku Engineering was used to conduct in-depth interviews with 10 experienced tourists in tea ecological tourism. Through EGM, the charm factors were extracted as 6 factors: reassuring feeling, relaxing feeling, comfortable feeling, pleasant feeling, scientific and professional feeling, and intimate feeling. Secondly, The Quantification Theory Type I (QTTI) was used to analyze the weights of the relationships between the charm factors (abstract feeling/upper level) and the specific influencing factors (original evaluation item/middle and lower levels). The results showed that the reassuring feeling, relaxing feeling, scientific and professional feeling, and intimate feeling were strongly correlated to their corresponding specific influencing factors. The strategy of creating four different feeling directions for ecological tourism was proposed. This study provides a reference for the development and planning of ecological tourism. And it hopes to help to improve the quality of tea agricultural tourism development and reduce waste of social and environment resources caused by indiscriminate development.

Keywords: evaluation grid method, quantification theory type I, Miryoku engineering

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INTRODUCTION

In these decades, tourism has become an important part of people's lives. Percentage of gross domestic product (GDP) which benefits from Tourism is increasing year by year (Andrades and Dimanche 2017). Due to the rapid development of tourism, ecological tourism has become the new focus of modern holiday tourism. "Ecological tourism" was proposed by Lascurain in 1980s. Its meaning was purposeful traveling of naturalists to the virgin nature locations aimed at their study, observation of wild flora and fauna and to enjoy contact with nature as well as to study cultural values, both ancient and modern, which are located on these territories (Lascurain 1987). Ecological tourism has developed rapidly in recent decades. According to the five Five-year statistics, ecological tourism accounts for more than 25% in the tourism market in the world (Nikolaeva et al. 2018). And, the number of ecological tourists increases by 20% every year (Martysenko 2013).

With the concept of "ecological tourism" put forward, the concepts of natural tourism, green tourism,

rural tourism, agricultural tourism and other concepts have also emerged. All of them are a multi-faceted activity rooted in social and environment resources (Yang et al. 2010). They have an important common point: based on the development of natural environment. Thus, they also surrounded by the contradiction between resource protection and tourism development (Zhang et al. 2012). Because of natural plants and landscapes are their core tourist resources, and the tourism activities are bound to bring various pressures to the environment. So, when ecological tourism brings growth to economy, it also consumes the earth's environmental resources. Between ecological protection and economic interests, people tend to get lost. The development of ecological tourism gradually become the main purpose of economic interests. More and more homogeneous and unreasonable ecological tourism areas appear. Ecological tourism begins to lose its core charm, and difficult to meet the needs of tourists.

Therefore, the study will study the charm factor of ecological tourism from the feeling of tourists. To

provide some strategies for the reasonable development of ecological tourism based on user centered.

LITERATURE REVIEW

Ecological Tourism

Ecological tourism is a sustainable way of tourism (Lukichev 2001). It refers to a travel that go to places that are less polluted or damaged and have unique natural scenery. It includes four aspects: natural environment, sustainable development, education and training (Allcock et al. 1994). It should mainly promote the protection, environmental education and economic benefits of the tourist area (Lindberg 1991). With the develop of ecological tourism, the development of the tourist area is diversification. The ways of ecological tourism are different according to the characteristics of tourist attractions and tourism themes. for example, from the non-renewability of related scenery in the ecological tourist area, Bunakov et al. (2018) proposed "Last Chance Tourism" based on Russian analogue of the list of endangered objects. On the other hand, form the local activities, for example agriculture tourism, also derived another way of ecological tourism: ecological agriculture tourism. It has become an effective way of rural revitalization.

Agriculture tourism as a rural development strategy of local Government and occupy an important position in national public policy (Scott et al 2014). agriculture tourism has been offered up as one such form of diversification (McGehee et al. 2007). Definition of agriculture tourism proposed by Weaver and Fennell (1997) is that rural enterprises which incorporate both a working farm environment and a commercial tourism component. It can effectively solve the widening gap between urban and rural income levels (Brodt et al. 2006). For agricultural tourism, ecological agriculture is an important entry point, and evolved into ecotourism agriculture (Tao et al. 2010). With ecological agricultural tourism becoming a new trend of tourism, ecological agricultural tourism is considered to be an effective way to encourage urban consumers to support sustainable agricultural policies (Brodt et al. 2006). It has established many ecological agricultural leisure areas through the cooperation between the government and local enterprises. The areas include ecological agricultural parks, administrative regions, theme parks and organic farms. There are many opportunities to create economic benefits (Scott et al. 2014). The beneficiaries of it are not only for enterprises, but also for the farmers in the areas. In the development of ecological agricultural leisure areas, tea is most common theme.

Tea tourism based on ecological tourism can not only promote the development of tea culture, but also gradually become a good way for leisure (Dong et al. 2009). It is a kind of tea industry resources on the basis of tea production and involve tea products, pastoral scenery and local culture. Through the combination of tea industry and ecological tourism, it breaks through the traditional production mode of tea industry and establish an interactive mechanism of tea industry and ecological tourism. It is a new type of ecological mode of tea industry plus tourism (Li and Huang 2005). The combination of tea industry and tourism can promote both tourism and tea industry. However, the current development of tea ecological tourism is not perfect, and some problems remain to be solved. First of all, large numbers of similar tourist areas and common tour mode has resulted in their decreased charm and con not meet diverse tourist needs (Zhang 2017). Secondly, the unreasonable development and old-fashioned landscape modeling, has destroyed the original ecology of tea gardens, thus leading to the gradual loss of the original charm of ecological tourism (Zheng 2016). It also destroyed the natural environment and violated the purpose of sustainable development of ecological tourism. At the same time, the tourism is based on the transformation of consumers' consumption concepts from material demands to spiritual demands. For tourist, a good ecological tourism should match their emotional needs So, tea ecological tourism should be focused on the feelings of tourists.

So, the study will from the feelings of tourists to research the ecological tourism. tea ecological tourism as a typical representative. It will try to find the charm factors of ecological tourism, then to provide a strategy for it to create an effectively ecological tourist area. Thus, hopes to enhance the economic benefit and low waste environment resources. To get the charm factors of ecological tourism, Miryoku Engineering is a useful method.

Miryoku Engineering

Miryoku Engineering was initiated by the Japanese scholar Masato Ujigawa in 1991 based on Preference theory for developing attractive products or systems (Ujigawa 2000). In 1988, it was incorporated into the newly established Japan Kansei Engineering association. Charm is an important factor that attracts consumers. If the charm factors are obtained and considered in the design of products, these charm factors will become the key to the success of products (Ma 2010). Therefore, the extraction of charm factors is important in the design of products. In this study, with the methods of Miryoku

Engineering, the charm factors of ecological tourism were analyzed and discussed. The charm factors were further converted into design strategies to improve the charm of the ecological tourism.

Evaluation Grid Method (EGM) is an important method in Miryoku Engineering. It can structure the abstract feelings of interviewees into concrete feelings (Shen 2013). Through repeated operations, it can sort out the three-level structures of abstract reasons (upper level: abstract value judgment), original evaluation items (middle level: perception understanding), and specific conditions (lower level: objective and specific understanding) (Imai 2009). The responses of interviewees are uniformly sorted out and the charm factors of the products to consumers' preferences and their related construction networks are analyzed in detail (Chen 2012). In this study, according to the evaluation and construction method, through in-depth interviews with the tourists, the charm factors of it are sorted out.

In Quantification Theory Type I, according to multiple regression analysis method, the approximate functional relationship between a certain variable and other qualitative item groups is obtained to determine the influence intensity of each "qualitative item" (independent variable-X) on the target variable (dependent variable-Y) (Hayashi 1950). In this study, dependent variable-Y is the upper level-abstract feeling of tea ecological tourism (called charm factors) and independent variable-X (Items) is the middle level-original evaluation items. Each item consists of several "categories", which is the lower level-objective and specific understanding of tea ecological tourism. All samples contain one "category" in each "item" and can be used to establish regression formulas (see below) for predicting the variability of data and events. In this study, the Quantitative Theory Type I was used to evaluate the influence intensity and weight relationship of each charm characteristic factor (item, category) extracted by the EGM method. In other words, the influence intensity and weight relationship between the middle-level evaluation items and the lower level on the upper-level factors were analyzed.

$$y = \Sigma\beta x + e$$

where y is the experimental predictive value; β is the category weight score; x is the various categories; e is the random variable.

RESEARCH PROCESS

The research procedure of this study as follow. Selected the interviewee who had experience of tea ecological tourism. Applied EGM to interview them, then sorted out the hierarchical diagram of it, and extracted the charm factors. According to the hierarchical diagram, questionnaires of QTTI were made. To do QTTI coding and analysis after the questionnaires were collected. At last, proposed the strategies for charming ecological tourism constructing.

Extraction of Charm Factors

The interviewees were performed among the tourist of tea ecological tourism according to the EGM. The interviewees were tea science-related professionals who had visited more than 9 times experience of tea ecological tourism. The interviewees include 2 trainers of tea art, 2 researchers of tea culture, 3 graduates of Fujian Agriculture and Forestry University majoring in tea science and 2 teachers of tea science (including 4 boys and 5 girls). They have a systematic understanding of the professional knowledge of tea science and have experiences in tea ecological tourism. Each person was respectively interviewed for about one hour in a space without the interference from the external environment.

The specific steps of the interview are described as follows. The first step is to invite the interviewees to name their favorite three tea ecological tourist area based on their own experiences and knowledge and sort them out. The second step is to invite the interviewees to compare the three tea ecological tourist areas according to their choice. For example, the reason why you like the first one more than the second favorite one will be discussed. And the original evaluation items are obtained. In the third step, according to the original evaluation items, the superior (abstract feeling of original evaluation items) and inferior (specific description of original evaluation item) descriptions are also obtained. In the fourth step, using the KJ method (Kawakita 1991) to sort out the EGM hierarchical diagram. Calculate the times of every emotion words (Upper level) mentioned by the interviewee. And then count the average times as the selected conditions for charm factors.

Evaluation Relationship between Charm Factors and Characteristics

The charm factors of tea ecological tourism extracted by the EGM were the Y of the QTTI. Each charm factor corresponds to the middle level is X (item) of QTTI, and each middle level corresponds to the lower level of category. Each charm factor is turned into

Reassuring feeling	Scientific professional feeling	Relaxing feeling
<p>X1-Tea leaves have good growth environment 1-Natural cultivation methods are adopted to reduce diseases and insects (e.g. interplant). 2-Not polluted spring water, rare earth monitoring clearance. 3-Good natural environment (altitude is high, and morning mist fills the air). 4-Many kinds of animals (the biological chain harmonious). X2- Unpolluted natural environment 1- Unpolluted natural spring water. 2- Far away from urban and rural living areas. 3 - Reclaimed from virgin land. X3- Organic Mode 1- No pesticide was applied and natural methods 2-Many kinds of animals (the biological chain harmonious). 3 -Regular organic certification. X4-Serious tea making process 1- No pesticide was applied and natural methods 2- The sanitary tea production. 3- Traditional manual tillage method. X5- Regulating scientific research facilities for agricultural activities 1-Automatic instruments timely detect the growth environment and growth situation of tea leaves 2-Automatic tea machinery decides sprinkler irrigation, fertilization and other labor. X6- Professional tea garden staff 1-All production posts have specialized technical personnel. 2 - Each post has exclusive full-time management staff. X7-Large-scale enterprise development 1-Government support. 2- Regular training of employees. 3-Employ fixed full-time staff. 4-Industry-university cooperation.</p>	<p>X1-Regulating scientific research facilities for agricultural activities 1-Have a research center. 2-Automatic instrument for detecting tea growth environment in time. 3-Automatic tea machinery decides sprinkler irrigation, fertilization and other labor. X2-Tea making machine capable of watching and experiencing. 1-Ancient tea making machine, can be experienced. 2-Modern and traditional tea making machines are available and can be experienced 3-Modern tea-making machine. X3-Hold exchange meetings 1-New tea tasting exchange meeting 2-Tea making technology exchange meeting. 3-Tea King competition exchange meeting. X4-Reasonable tea garden planning 1-Tea variety garden 2-Interplanting plants 3- Professional sub-regional planting X5-Scale enterprise development 1-Government support 2-Regular training of employees 3- Diverse products. 4-There are fixed full-time personnel. 5-Large investment in hardware facilities and perfect construction. X6-Professional knowledge is explained. 1-Establish a brand of tea knowledge. 2- Special personnel to guide and explain.</p>	<p>X1-Good ecological environment in tea of gardens 1-Good natural environment (surrounded by mountains, covered with forests, the air quality is superior). 2- Unpolluted natural spring water. X2- A lot of livestock 1- Many kinds of animals (the harmonious biological chain). 2- Animals can be sold. 2-Domestic animals make the best use of their things. X3-Carry out farm fun projects 1- Users can participate in picking activities. 2-Ingredients are organic products. 3- Freshly picked ingredients. X4-Tea art experiences 1-Provide the venue to make tea by oneself. 2-Specialized personnel teach tea tasting skills. 3-Special personnel perform tea art.. X5-The tea garden is large. 1-The area of the tea mountain is large. 2-The main area of tea garden is large. 3-The tea field is large and endless. X6-Beautiful Scenery 1- surrounded by mountains, covered with forests, and good air quality 2-Non-polluted mountain spring water 3-The interplanting various ornamental plants 4-Good field of vision, less obstructions 5- Artificial landscape, architecture and natural landscape are integrated X7-Complete supporting facilities 1-There are a plural of entertainment facilities (tea clubs, KTV, etc.) 2-Hotel accommodation is superior.</p>
Comfortable feeling	Pleasant feeling	Intimate feeling
<p>X1- Considerate accommodation 1-The accommodation has good internal facilities. 2-Single-family cabin. 3-The room is decorated with Chinese fir. 4-There is a special area for making tea. X2-interplanting plants 1-Various ornamental plants 2-Large plantation area has a lot of interplanted plants. 3-Distributed throughout tea gardens. X3-Beautiful scenery 1-The natural scenery is attractive. 2-A variety of interplanted plants. 3- Vision is good with less obstruction 4- Natural lake water. X4- Tea garden is natural and harmonious. 1-Single-family cabin integrated with nature. 2-Ornamental trees are natural growth. X5- Considerate Service 1- Speak politely. 2- Good body etiquette details. 3-managers are friendly and talkative. 4-The staff are kind. 5-Staff members are very enthusiastic.</p>	<p>X1-Tea leaves have the good growth environment 1-Less tea plant diseases and insect pests. 2- Spring water makes tea better to drink. 3-The natural environment is nice. 4-Many kinds of animals allow the harmonious biological chain. X2-Experiential activity 1-Ancient tea making machine can be experienced. 2- Experience tea tasting and tea art. X3-Beautiful scenery 1- Beautiful tea fields 2- Various ornamental plants 3- Vision is good with less obstruction 4- Natural lake water. 5-Surrounded by mountains and covered with forests.</p>	<p>X1-Full supporting facilities 1- Special rest pavilion during the tour 2-Many entertainment facilities (tea clubs, KTV, etc.). 3- Hotel accommodation is excellent. 4-Establish the brand of tea knowledge. 5-Tea variety garden for learning tea while watching. X2 - Full services 1-Specialized personnel to guide tea things. 2-Many kinds of tea samples offered 3-All service personnel have decent manners 4-Workers meet the specially needs of customers.</p>

Fig. 1. The details of items and categories of QTTI

a quantifiable questionnaire to be further verified through a questionnaire survey. Through the statistical analysis of the results based on QTTI, it can further understand the influence intensity and weight

relationship of the original evaluation items (middle level) and the specific characteristics (lower level) of tea ecological tourism on the charm factors (abstract feelings/upper level) of tea ecological tourism.

Table 1. The coding of QTTI

NO.	Reassuring feeling							
	X1	X2	X3	X4	X5	X6	X7	Y
1	2	2	1	2	1	1	2	32
2	2	1	1	1	1	2	3	25
3	2	1	1	1	1	1	4	29
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Table 2. Results of QTTI of Reassuring feeling

Reassuring feeling			
Items	Categories	CS	PCC
X1	1	-6.13	0.52
	2	0.56	
	3	-0.42	
	4	5.47	
X2	1	-0.03	0.24
	2	2.43	
	3	-3.32	
X3	1	-1.52	0.44
	2	0.70	
	3	2.77	
X4	1	0.38	0.46
	2	-2.78	
	3	2.89	
X5	1	0.91	0.39
	2	-3.17	
X6	1	-1.12	0.25
	2	1.21	
X7	1	3.31	0.39
	2	-1.93	
	3	-1.30	
	4	2.14	
Cons.		29.96	
R		0.71	
R ²		0.51	

Note: CS=category scores; PCC=partial correlation coefficients

The Y value of QTTI is the total score of the points indicating the influencing degree of each middle level (divided into 1-7 points according to the degree of influence) on the upper level. X represents the median original evaluation item, which is counted as 1, 2,according to its order. The features of the lower bits corresponding to each middle bit are coded with 1, 2, 3, In this way, each interviewee has a corresponding piece of coding information. The data of all subjects were calculated and analyzed by QTTI.

RESULTS AND ANALYSIS

Results of EGM

The EGM hierarchical diagram is sorted out. The main charm factors of tea ecological tourism are extracted. According to the overall EGM hierarchical diagram, the number of all points in the upper level evaluation items (the number mentioned by the interviewees) is 209; total vocabulary item is 16; average number of points is 13.06, which is the screening conditions of the abstract feeling of charm factor in this

Table 3. Results of QTTI of Scientific professional feeling

Scientific professional feeling			
Items	Categories	CS	PCC
X1	1	0.57	0.39
	2	-1.87	
	3	1.32	
X2	1	18.24	0.68
	2	-0.83	
	3	1.77	
X3	1	1.15	0.27
	2	-0.09	
	3	-1.34	
X4	1	-16.29	0.77
	2	-0.10	
	3	1.49	
X5	1	2.49	0.32
	2	-0.96	
	3	0.39	
	4	-0.72	
X6	1	1.13	0.29
	2	-0.60	
Cons.		24.23	
R		0.82	
R ²		0.67	

study. Therefore, the abstract feelings require more than 13points in the screening conditions of charm factors of tea ecological tourism. The obtained charm factors included reassuring feeling (40), relaxing feeling (23), comfortable feeling (21), pleasant feeling (21), scientific and professional feeling (20), and intimate feeling (17).

The details of items and categories of QTTI see in **Fig. 1.** The coding of QTTI as like in **Table 1.**

QTTI Results

The results of QTTI are displayed in **Table 2, 3, 4, 5.** Sugiyama (1996) proposed multiple correlation coefficient (R) values to indicate the relationship between criterion variable and explanatory variable, and high R values indicated high analytical reliability (Sugiyama 1996). R² greater than 0.5 is generally considered to be acceptable (Nishino 2001, Ho 2015). According to the results, the R² values of these factors were obtained as: reassuring feeling (R² =0.51), scientific professional feeling (R² =0.67), relaxing feeling (R² =0.82) and intimate feeling (R² =0.84), indicating that the original evaluation elements of these four groups of feelings were strongly related to the upper items. The R² values of two factors were lower than 0.5: comfortable feeling (R² = 0.38) and pleasant feeling (R² =0.15). Therefore, this article does not make in-depth analysis and discussion of the two factors.

Table 4. Results of QTTI of Scientific Relaxing feeling

Relaxing feeling			
Items	Categories	CS	PCC
X1	1	0.31	0.32
	2	-1.70	
X2	1	-0.38	0.62
	2	7.39	
	3	-0.82	
X3	1	-0.40	0.30
	2	1.20	
	3	-0.58	
X4	1	1.42	0.59
	2	0.13	
	3	-3.30	
X5	1	1.60	0.63
	2	-2.27	
	3	0.93	
X6	1	-1.53	0.89
	2	11.76	
	3	-11.73	
	4	0.47	
	5	4.59	
X7	1	0.99	0.55
	2	-1.59	
Cons.		28.88	
R		0.91	
R ²		0.82	

Table 5. Results of QTTI of Scientific Intimate feeling

Intimate feeling			
Items	Categories	CS	PCC
X1	1	-0.28	0.50
	2	0.07	
	3	0.56	
	4	-0.81	
	5	0.33	
X2	1	-0.02	0.91
	2	-6.91	
	3	0.61	
	4	0.14	
Cons.		9.19	
R		0.92	
R ²		0.84	

The partial correlation coefficients (PCC) indicate the relationship between the original evaluation items (X) and each abstract feeling (Y). Higher OEI grade indicates the more significant influence of the abstract feeling. As shown in **Table 2**, the top three partial correlation coefficients that can most affect the Reassuring feeling are: good tea growing environment (PCC=0.52), serious tea making (PCC=0.46), organic mode (PCC=0.44), scientific research facilities that regulate farming (PCC=0.39), projects of large-scale enterprises (PCC=0.39), professional tea garden workers (PCC=0.25), and non-polluted natural environment (PCC=0.24). The degree of the factors affecting the comfortable feeling in turn according to the PCC value. One of the most important factors is the good growth environment of tea leaves (PCC=0.52>0.5).

The category scores (CS) respond to the positive or negative influence of the design elements on the OEI. For example, in the reassuring feeling, CS values of two items of the main influencing factors (natural tea growth environment) are positive. The first element is good soil quality, non-polluted water, and qualified rare earth contents (CS=0.56). The second is breeding a variety of animals for the harmonious biological chain (CS=0.54). The two lower-level items tend to have the positive impact on the “comfortable feeling” of tea ecological tourism. The other two lower-level items have the negative CS values, indicating that they tend to have a negative impact feeling of tea ecological tourism.

DISCUSSION

Therefore, based on the results of the Quantitative Theory Type I, it can develop the design strategy of ecological tourism based on the consideration of the psychological feelings of tourists.

Firstly, a reassuring feeling of ecological tourism is created. The most important thing is to ensure a good plant growth environment and cultivate a variety of animals which can make the biological chain of harmony of natural environment and ecology. In addition, the traditional artificial crops planting method is adopted to ensure the quality of it. Related crops are regularly tested in reliable testing institutions. Starting from three aspects of environment, tillage methods, related products processing and manufacturing method, ecological or organic testing. The user’s sense of comfort for ecological tourism can be created.

Secondly, a scientific and professional feeling of ecological tourism is created in two aspects: plants/crops planning and rigorous and professional plantation zoning according to soil conditions, plants/crops types, planting demands, etc. Traditional and modern equipment is provided for users to experience.

Thirdly, a relaxing feeling of ecological tourism is created. The scenery should ensure that the water source is natural spring water that can be drunk directly. The artificial landscape and architecture should not be abrupt, and they should be integrated with nature. In addition, the area is large and has an endless sense of vision. A lot of livestock and animals should be raised to enrich the natural environment and tourist can buy the raised animals. Moreover, a place should be arranged for users to experience and learn something relevant. At the same time, the tourist can obtain the guidance from special personnel.

Fourthly, an intimate feeling of ecological tourism is created. The services, especially the etiquette of the service personnel, including the way of speaking, tone of voice, and physical details, should be enhanced. Good supporting facilities, including accommodation facilities, and recreational facilities should be provided.

CONCLUSION

The ecological tourism industry has developed rapidly. However, various problems have appeared in it. It has deviate from its essence of slow living, leisure and sustainability. More and more ecological tourist areas lose their unique features and become unattractive. And

lead the tourist area to be useless, and finally become a waste of social and environmental resources. In this paper, the charm factors and their influencing factors of ecological tourism were extracted through the relevant methods of Miryoku Engineering, they are reassuring feeling, relaxing feeling, comfortable feeling, pleasant feeling, scientific and professional feeling, and intimate feeling. The construction strategy based on four charm factors was put forward. The study provides the basis for the rapid development of ecological tourism. It hopes to provide advice for relevant people who build tea agriculture tourist area that have efficient travel experience.

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