Green Innovation, Environmental Protection Perception and Tourism Decision-Making Behavior: Evidence from Tourism in China

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Abstract: The tourism industry has become "new growth point" in Chinese tourism industry. The relationship between green innovation perception and tourism decision-making behavior of old aged was discussed. The intermediary role of environmental protection perception of old aged was also discussed. The subjects were sampled from tourism in China. The research result shows that green innovation perception is positively correlated with environmental protection perception of old aged, also environmental protection perception is positively correlated with tourism decision-making behavior of old aged. Among these, environmental protection perception of old aged plays intermediary role. Thus, product innovation of tourism has a promoting effect on tourism decision-making behavior of old aged can be revealed, which will provide scientific guidance and practical significance to tourism.

Keywords: Green Innovation Perception, Environmental Protection Perception, Tourism Decision-making Behavior

1. Introduction

China's economic and social development has entered a "new normal" stage, innovation drive has become the core driving force of state economic development. The tourism industry has become "new growth points" in development of China. Group innovative enterprises of tourism have been established in Hainan, Yangtze River delta, etc. The innovations of those tourism enterprises always bring forth new ideas and improve unceasingly. The green innovations of tourism have been developed from tours of vacation, leisure and recuperation to the green environmental protection technology, such as Yanghe liquor factory cultural tourist park which is state-level 4A tourist area in China. International conservation union (IUCN) puts forward the concept of "ecological tourism". Today, the ecological tourism is the main form of sustainable development of tourism industry around the world, so green tourism is the part of ecological tourism has been widely accepted and practiced. For example, green innovation tour always around the tourist resort can take tourists to promote their environmental protection knowledge and appreciate the natural ecology. Whether the green innovations of tourism are perceived by consumers and encourage consumers decide to travel are important problems worthy of study.

Old aged are major constituent parts of travelers in tourism industry. In China the trend of population aging is more evidence, the overall numbers and proportions of older people are rising rapidly. By the end of 2013, the number of Chinese citizens aged 60 or over had risen to more than 202 million, China was one of the nations that have the highest numbers of old people in the world. Compared with other consumers, old aged has large amount of economic wealth, lot of profound knowledge, full of energy, and rich of life experience. Chinese old aged refer primarily to intellectuals and technical staff aged 60 or older. Old aged prefer to develop a new state of life through social participation in order to realize self-value. These old aged have strong power of consumption, and pay more attention to the spiritual and cultural life. These old aged pursue fashion to restore their health and smart by consuming.

Therefore, these old aged have high tour frequency, long tour stays, and enjoy traveling to further places. So it can be concluded that old aged are main force to consume green innovation tourism. This huge target marketing group can create new market demands and new economic growths for tourism industry in China. Green innovations of tourism could provide strong chance for old aged walk into the nature and enrich their scientific knowledge, then help them to seek longer and healthier lives. After participating in green innovation tourism, old aged can improve their health, and have the capacities to engage in more social activities. So that, old aged can often make their own decisions, then they can join tourism. Therefore, the perception of environment protection can directly influent green innovation perception of old aged in tourism, and have effect on tourism decision-making behavior of old aged. In literature, there are very few

discussions on the relationship and interactions of green innovation, environmental protection perception and tourism decision-making behavior of old aged. So this research are trying to prove that tourism decision-making behavior can be affected by their green innovation perception of old aged who are consumers in tourism, also environmental protection perception of old aged can be affected by green innovation perception too.

2. Literature Review

2.1. Green Innovation Perception

Green innovation means that the enterprises reduce environmental pollution, and save resources according to the external environment and their own conditions. In China, the main green innovation direction of modern tourism is to improve the environment of tourist areas, or often use the technology of green and clean. In our depth interviews, we find that the enterprises of tourism like to tell about the advanced of green innovation technology, but consumers perceive the innovation have large distances from the enterprises. Consumers most perceive and concern about are the result of the green innovation rather than the background. Therefore, we measure green innovation should consider from the views of consumers perceptions and.

2.2. Environmental Protection Perception

Environmental protection is refers to the behavior which use their own resources to protect the environment. Generally speaking, countries that are wealthier tend to devote greater societal resources to domestic environmental preservation. For the sustainable development of tourist industry and continuous utilization of tourist resources, the ecological environment of protecting the tourist resort is the key. Tourists have the high tourist satisfaction and recommendation intention on those tourist resorts which pay more attention to environmental protection.

2.3. Tourism Decision-Making Behavior

Tourism decision-making behavior is a behavior which made by tourist to decide whether travelling, the decisions include travel destinations, travel cost, etc. When old aged make tourism decisions, they mainly consider two factors which are health and income. The length of stay in travel destinations relates to the age of old aged. According to the research, aged of 65 will to extend length of tourist stay by the increasing family income level. The immediate cause of tourists' decision-making is tourist motive. According to the tourist motive theory of Robert Mackintosh, motives of tourists can be divided in health motivation, culture motivation, social motivation and prestige motive. For old aged, their main tourist motive is health motivation. They want the tourism not only can enjoy entertainments, but also can care health. After retired and unemployed, old aged are willing to spend time and

energy to visit the motherland of the great rivers and mountains. The places which have rich natural beauties, appropriate climate and suit for health care are becoming the most willing tourism destinations in China.

3. Research Model

3.1. Green Innovation and Environmental Protection Perception

For China's tourism industry, the importance of tourism' green innovation has grown increasingly. Green innovation of tourism expands the traditional tourism boundary and compromises services of tourism. Finally, the industrial chain across multi-field and multi-levelled has been formed. Industry and travel industry are all the burgeoning industries with strong connections with other industries. A combination of two industries can expand sale channels and gain more customer source. Most old aged are the original customers of traditional tourism. Also parts of old aged are the patients and need to have treatments. When those old aged take part in industry, their physical and moral integrity have improved. They will actively participate in social practice.

H1: Green innovation perception has a direct positive effect on environmental protection perception of old aged.

3.2. Environmental Protection Perception and Tourism Decision-Making Behavior

In China, old aged willing to travel always is the high-level academic leaders or business backbone in some professional field before they retired. With their economic power, old aged have more possibility to travel. They not only pay attention to tourism roles such as get fun, but also pay attention to improve their cultural cultivation, experience rich and sentiment enhanced. The older aged perceive the tourist resorts save resources, protect resources and natural environment, balance social ecological, they more likely to be satisfied of tourist resorts and they can make tourism decision quickly. Old aged with high environmental protection perception have much easier to get more positive self-image and willing to participate in tourist.

H2: Environmental protection perception has a direct positive effect on tourism decision-making behavior of old aged.

3.3. Green Innovation Perception and Tourism Decision-Making Behavior

Green innovation of tourism creates innovative integration of numerous green resources and tourism resources, also realizes the innovative integration and penetration over borders of tourism industry. Along with the growth of age, old aged major concern the safety and health on their vacations when they make tourism decision. So, green innovation tourism is a

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tourism product which suitable for old aged. Old aged also need more consider on the tourist resorts which integrating tourism and green products.

H3: Green innovation perception has a direct positive effect on tourism decision-making behavior of old aged.

3.4. Intermediary Role of Environmental Protection Perception

Though environmental protection perception, old aged can be improved their tourism information and their enthusiasm of participation in tourism can be increased. Although old aged obtain the tourist resorts information of environmental protection, this does not mean that old aged will make tourism decision immediately. Only the tourist resorts' green innovation has adequately attraction to promote old aged to make the tourism decisions. So between the green innovation perception, environmental protection perception and tourism decision-making behavior of old aged, there is an implication that tourism decision-making behavior of old aged can be influenced by green innovation perception through environmental protection perception. Green innovation perception has effects on tourism decision-making behavior of old aged by the intermediary role of environmental protection perception. Environmental protection perception of old aged plays an intermediary role in green innovation and tourism decision-making behavior of old aged.

H4: Environmental protection perception plays an intermediary role in green innovation perception and tourism decision-making behavior of old aged.
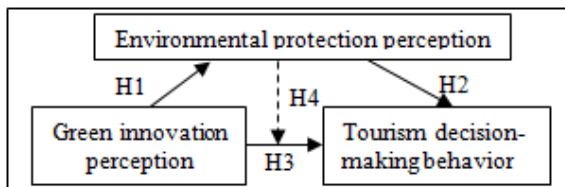

Figure1: Theoretical model

4. Study Design

4.1. Data Collection

The participants in the study were old aged from Yangtze River delta in China. Yangtze River delta is one of the developed areas in China. Old aged in this area have better economic conditions, higher education level and social participation level. Also Yangtze River delta has very many green innovation tourism resources, such as industrial tourism, leisure fishery tourism, science and technology education tourism, etc. Yangtze River delta is a very ideal area which can be used to research on the problems of green innovation perception, tourism decision-making behavior of old aged and relationship between them. This research mainly uses in-depth interview combine with survey of questionnaire in practice. Based on the

search of literature materials, the original questionnaire have been designed and modified. Then following the questions outlined, fifteen retired old aged in Yangtze River delta have been counselled face to face through the method of Delphi. Items in original questionnaire have been modified and deleted at last when their opinions are converging. Before the formal research, preliminary research has been taken. Sample size is 30 retired old aged. Those old aged engaged in different industries, and their duties and positions are different too. After preliminary research, reliability and validity of questionnaire have been tested and the results fulfil the requirements. Then, formal investigation have been taken, the questionnaire are collected by two means. First is snowball way through introducing by interviewed old aged. Second is on the spot to fill the questionnaire. Those old aged participate in a hot spring resort project. This investigation has all issued 280 questionnaires, of which 269 valid questionnaires, for an effective questionnaire returns-ratio is 96.07%.

4.2. Sample Characteristics

Study on old aged has been widely reported. The concept of old aged is defined mainly by setting necessary conditions. Only satisfied with two conditions at the same time, these elderly people can be called as old aged whose are target customers in tourism industry. Two conditions are respectively: (1) the elderly people aged 60 and above, dealt with emeritus formalities; (2) the elderly people have physical fitness and with labor capacities. Based on the valid questionnaires, sample characteristics of this research are shown in table 1. The samples originate from the old aged in Yangtze River delta.

Table 1: Sample characteristic of old aged

Age	(%)	Gender	(%)
60-65	32.8%	Male	68.2%
66-70	37.8%	Female	31.8%
> 71	29.4%		
Physical condition	**(%)**	**Family composition**	**(%)**
Well	34.6%	Solitude	26.9%
Good	26.2%	Empty Nest	50.3%
Worse	39.2%	Living with child	22.8%
Education level	**（%）**	**Household income**	**（%）**
Bachelor above	13.4%	10001 Yuan and above	38.1%
Bachelor	22.9%	5000-10000 Yuan	36.8%
Junior college	37.6%	4999 Yuan and below	25.1%
High school	26.1%		

4.3. Variable Measurement

Through literature consulting, relative scales empirically tested have been used in order to ensure the reliability and validity of evaluation questionnaire

is acceptable. Then those relative scales have been modified and optimized on the basis of advice from experts in Delphi. The main variables measurements of this questionnaire are composed of multiple items. The English relative scales had been translated into Chinese, and then the Chinese scales had been translated into English again, in order to check the semantic ambiguity. So this questionnaire has reasonable reliability and validity.

According to the research result of Robert Mackintosh' tourist motive theory, the four items have been used to measure the directions of tourism green innovation. Considering the tourist motivation you will choose, TI1: green innovation tourism of improved environmental conditions. TI2: green innovation tourism of green technology. TI3: green innovation tourism of ecological landscape. TI4: green innovation tourism of green products.

The representative items of environmental protection perception are referring to the scale of Rupp (2013). There are 3 items in the scale. Three items have been used to measure environmental protection perception of old aged. Before going to tourist destination, you will consider, SP1: tourism projects in the good performance of the environmental responsibility. SP2: tourism project use part of the profit for the protection of the environment. SP3: tourism projects put environmental protection as part of the enterprise strategy.

Seven items have been used to measure the affecting factors of old aged' tourism decision-making behavior, according to the scales of Jens Kr. Steen Jacobsen. How much influence of the aspect on you tourism decision-making? DP1: expense. DP2: destination' distance. DP3: destination' beautiful surroundings. DP4: destination' security. DP5: destination' profile. DP6: destination' accommodations and catering conditions. DP7: destination' traffic convenience.

All of the above items design according to the 5-point Likert scale from 1 = not important to 5 = very important.

4.4. Common Method Biases Testing

Harman's single-factor test has been taken for factor analysis of all the items in the questionnaire. The first principal component without rotation, its factor load only 44.5%, below 50%. So there is no obvious problem of common variance in this questionnaire survey.

4.5. Data Quality Testing

Data quality testing mainly includes reliability and validity testing. Cronbach's Alpha has been used for reliability testing because this method is the most suitable for analyzing attitude and opinions questionnaire. As seen in table 2, KMO coefficients are above 0.7 and pass the test. The significant

probability level of Bartlett's test of spherical results <0.01 and pass the test.

Table 2: KMO and Cronbach's Alpha test

Measured KMO value	Approx. Chi－Square	df	Sig.
0.734	1675	43	0.000

As can be seen from the table 3, average variances extracted of factors are above 0.5, it shows that every item has higher convergent validity. Composite reliability is above 0.7, this shows that every item has higher internal consistency.

Table 3: Value Alpha, AVE, CR

Variable	Number	Cronbach's Alpha	AVE	CR
Green innovation perception	4	0.78	0.59	0.76
Environm-ental protection perception	3	0.72	0.64	0.73
Tourism decision-making behavior	7	0.80	0.72	0.81

Factor load of items are between 0.61 and 0.87, all above 0.5, it shows that selecting factors for variables has efficiency.

5. Results

5.1. Model Modification

After data test, linear structural equation modelling has been used for the path analysis, the path from green innovation perception to tourism decision-making behavior of old aged has been formed.

Model 1: green innovation perception and tourism decision-making behavior of old aged are specified as latent variables, the path from green innovation perception to tourism decision-making behavior of old aged has been formed.

Model 2: green innovation perception and environmental protection perception of old aged are specified as latent variables, the path from green innovation perception to environmental protection perception of old aged has been formed.

Model 3: green innovation perception, environmental protection perception and tourism decision-making behavior of old aged are specified as latent variables, three paths from green innovation perception to environmental protection perception, environmental protection perception to tourism decision-making behavior, and environmental protection perception to tourism decision-making behavior have been formed.

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Degrees of fitting of three models are shown in table 4. Model 1 and model 2 are able to fit. But in model 3, the fitting of path from green innovation perception to tourism decision-making behavior of old aged is not significant. So, this model can be deleted, model 4 can be constructed. Degrees of fitting of model 4 is better than model 3.

Table 4: Degrees of fitting of model

Model	X2	df	X2/df	GFI	AGFI
1	75.62	21	3.70	0.93	0.89
2	62.68	18	3.16	0.95	0.92
3	80.46	25	3.92	0.90	0.87
4	58.93	16	2.88	0.92	0.91
Model	RMSEA	IFI	TLI	CFI	
1	0.07	0.92	0.93	0.94	
2	0.06	0.93	0.94	0.95	
3	0.07	0.90	0.91	0.92	
4	0.06	0.94	0.92	0.93	

5.2. Hypothesis Testing

Fitting degree of the path from green innovation perception to environmental protection perception of old aged in model 2 and model 3 is very significant, this shows hypothesis 1 (H1) is received support. Fitting degree of the path from environmental protection perception to tourism decision-making behavior of old aged in model 3 and model 4 is very significant, this shows hypothesis 2 (H2) is received support. Fitting degree of the path from green innovation perception to tourism decision-making behavior of old aged is not significant, this shows that environmental protection perception is media variable. The difference between model 1 and model 3 is that the variable of environmental protection perception has been added to model 3 based on the model 1. When the media variable has been added, fitting degree of the path is not significant, this shows that environmental protection perception is the media variable between green innovation perception and tourism decision-making behavior of old aged.

6. Conclusions

Though the survey of old aged in Yangtze River delta in China, green innovation perception can improve environmental protection perception of old aged, green innovation perception can promote tourism decision-making behavior of old aged, and environmental protection perception is the media variable between green innovation perception and tourism decision-making behavior of old aged. Green innovation perception can not only directly improve tourism decision-making behavior of old aged, but can also indirectly promote tourism decision-making behavior of old aged. So it can be concluded that environmental protection perception has a significant positive and direct impact on tourism decision-making behavior of old aged. Green innovation perception plays an important role on tourism decision-making behavior of old aged. Green innovation perception of old aged can greatly attract old aged to perceive the environmental protection of tourist destination especially traditional Chinese tourism. And environmental protection perception increased of old aged is a necessary precondition for their tourism decision-making behaviors promoted.

The limitation of this article is only use of the cross section data to conduct empirical studies. In the future the research could continue to increase sample size from more area of China. Also the other variables which influence on old aged' tourism decision-making behavior can be considered.

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