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# Study on Core Values of Smart Tourism and Empirical Research Based on Tourist Perception

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**Abstract:** With the depth integration of the information technology industry and tourism industry, the intelligent tourism has become the inevitable choice of tourism transformation and upgrading. Represented by cloud computing and internet of things, the intelligent capability which was produced by the information technology industrial integration innovation application mode has become the main power to promote deep change of tourism industry. The article made an empirical analysis of smart tourism and extracted the five core values which are experience value, information value, innovation value, function value and cost value. Thus to put forward the four innovative development countermeasures so that make the smart tourism became the important grasp of promoting science technology value and strategic position of tourism industry.

**Keywords:** Smart tourism, core value, tourist perception

## 1. INTRODUCTION

IBM has put forward the vision “Smarter Planet” and derived some concepts like “Smarter city”, “Smarter transportation”, “Smarter healthcare”, “Smarter Education” and so on. It has brought the major changes of the information technology application model. With the powerful relevance, the tourism finds the joint point for the key technology which was relied by “SmarterCity” to connect with reality application. These breakthroughs of key technology will contribute to building the intelligent environment of tourism development and forming a new tourism operational types which based on huge amounts of data processing. The wide application of Smart tourism will significantly change the way of information acquisition, the way of travel experience and the way of value exchange of tourists. The change will have a significant impact on tourism industry. The service mode, product type and business model of all industrial forms will make a significant change and innovation. The regions and enterprises which hold the positive respond are sure to be rewarded and lead the direction of the industry innovation.

Overseas’ research on the “Smart Tourism” began at the end of the twentieth century, however it was not until the early twenty-first century when the truly research began. The research is mainly focus on needs study, technology application research and supply research. On the demand side, Lau (2006) applied geographic information system (GIS) to track visitors’ movement at the destination. This technology can help marketers to know the behavior of different types of tourists in tourism destination and make correlated strategy to innovative tourism experience. <sup>[1]</sup> In Turkey, for example, Kozak (2007) analyzed the tourists from 36 countries and reached the conclusion that different countries have different preferences. The demand for network information is different in the different stages of travel. For example, the information found on the internet are most likely to affect travel plans before departure.<sup>[2]</sup>Lehto (2012) found that local information supply can decide tourist travel plans after arriving at the destination. The intelligence system can analyze the operation of tourism activities and the study of the market.<sup>[3]</sup>In terms of technology application, Alfaro (2009) argued that the use of mobile devices will promote tourism experience in cultural tourism. The portable intelligent device will customized depth personalization service according to the tourists’ preferences, languages and required information.<sup>[4]</sup> Buhalis and

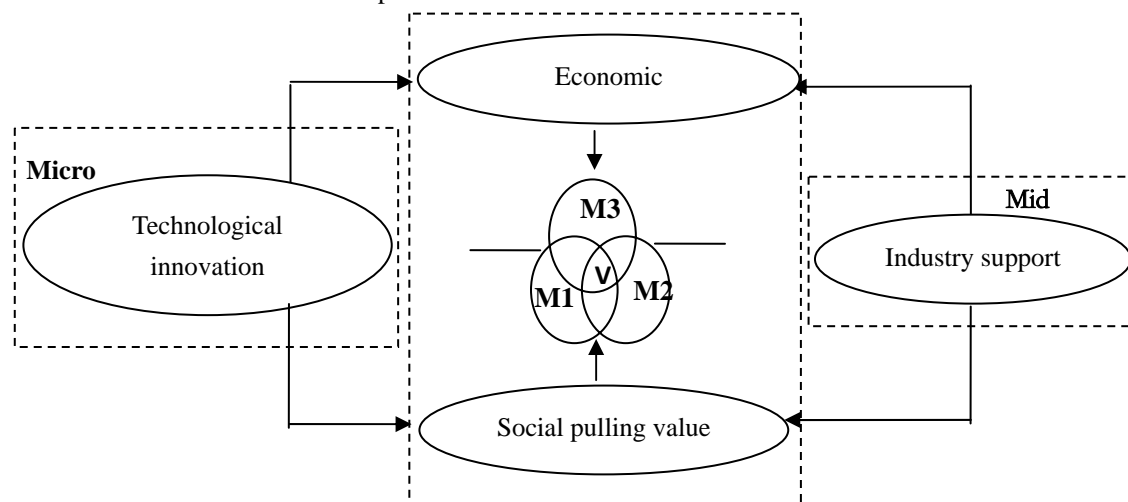
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O'Connor(2010) further theorized that wisdom tourism will develop the consumer-centric application and required technical section constantly improve technical service and remained innovation and competitiveness.<sup>[5]</sup> Singh and Kasavana (2005) predicted that the application of intelligent systems will depend on wireless infrastructure in the future and non-cash payment at destination will become more common.<sup>[6]</sup> Bloom(2009) suggested that using neural network applications to track tourists behavior so that analysis of the changing market segment.<sup>[7]</sup> On the supply side, Chathoth(2007) found that it can help hotel reduce the related operation transaction costs and achieve a competitive advantage in customer satisfaction and customer loyalty at the age of smart tourism.<sup>[8]</sup> Ho and Lee(2009) proposed a five-factor model to evaluate the service quality of smart tourism which including the quality, security, website features, customer relations and response.<sup>[9]</sup>

The new waves of smart tourism research began with the idea of Smarter Planet which was proposed by IBM, and the related research significantly increased over the last two years. From the perspective of concept interpretation, Ma Yong (2011) considered that smart tourism is characterized by online service which can satisfy the tourists demand to know more about tourist information through tourist information's collection and transmission. From the perspective of system construction, Zhang Lingyun (2012) proposed smart tourism theory system which is called CAA framework. Her article has presented the internet of things, mobile communication, cloud computing and artificial intelligence technology (AIT) are the four core technology of smart tourism and it also explained the value supply of smart tourism basis on multiple benefits.

From the perspective of core value, Foreign scholars have not research from this point of view. Through the literature review, it can be find that only Ma Yong and Chen Huiying carried out the exploratory attempt and concluded 3M value system framework. Through empirical analysis that it put out four core value of smart tourism which are science and technology innovation value, industrial support value, economic contribution value and social pull value, the four core value of smart tourism is significant, and the correlation coefficient is bigger which shows that the four values promote each other.



**M1 -Micro value M2 – Medium value M3 – Macro value V– Core Value**

**Figure 1.The 3M core value system of smart tourism development**

From figure 1 and table 5 , the core value of smart tourism's development includes micro, mid and macro .The three levels are closely tied to the syntheses and promoted each other. Science and technology innovation values can be converted into industrial endogenous power, to improve the content of science and technology industry, and promote the rapid development of industry, so as to create the huge economic contribution value and social pulling value; On the other hand, the development of economy and the progress of society, also innovating the science and technology, promoting the boom of industrial .

Based on the research of smart tourism at home and abroad, we found that most of the overseas studies

tend to practice guidance and domestic studies tend to theoretical research. Some researches focus on technical introduction but do not analyze its maneuverability, it leads to the problem on the disconnection between research result and practical application; researchers in different fields expressed their opinions and formed non-uniform research patterns, especially the non-uniform of technical terms caused the subsequent users confusion. It reflected the misunderstanding in early studies of smart tourism which overemphasized on core technology. Nowadays some scholars have realized that the core of smart tourism is tourist and the value of smart tourism is application. But for how to better serve related parts and how to better design more effective application model are still at the stage of exploration.

The aim of this research is trying to explore the composition and influencing factors of core value of smart tourism and build the model of core value of smart tourism.

## **2. THE SIGNIFICANCE OF SMART TOURISM VALUE RESEARCH**

So far, limited research can be found about the theory and practice of domestic smart tourism value. The tourism-related value researches have long been focused on tourism resource value, cultural value and brand value. There are very few research aimed at the perceived value of smart tourism and even less scholars have had profound studies of the perceived value of regional smart tourism. This paper started from whole new tourism format which attempted to reasonably and scientifically estimate the perceived value of smart value. It is the development and innovation of tourist value theory.

The purpose of this paper is to contribute to providing the scientific basis for decision making of tourism enterprise, thereby taking control of the market demand in real time and launching comprehensive tourism information and dynamic service. Moreover, the core value research of smart tourism in this paper is to strengthen the connection between the tourism enterprises and promote the integrative development between tourism and other modern service industries. Meanwhile the research of smart tourism core value achieved information sharing and one-stop service pattern and thus formed working resultant force and built a perfect tourism industry chain.

## **3. THE RESEARCH APPROACH OF SMART TOURISM' CORE VALUE**

The article undertook to investigate the core value of smart tourism by questionnaire. In May 2014, 300 questionnaires were sent through the electronic and field, eliminate some invalid questionnaires, finally a total of 262 valid questionnaires were received. The design process of scales in the questionnaire referenced the previous studies of scale development method. The questions were designed through combing the existing literature and searching the predecessor's research about smart tourism. As the basis of designing questionnaire, the paper is revised with expert in-depth interviews, and it combined with the practical need of study and tourism industry status quo.

The research mainly adopts the statistical analysis software spss17.0 version, has carried on the questionnaire of the reliability and validity analysis, exploratory factor analysis (EFA) to investigate the core value of smart tourism based on customer perception.

Factor analysis is the process which extracted public factor from variable group. Its aiming at decomposing the original variables so that summarizing the potential types and confirming the factor structure of scales.

## **4. THE VALUE STUDY OF THE SMART TOURISM'S DEVELOPMENT**

### **4.1 Reliability and validity analysis**

Do the exploratory factor analysis of samples by the SPSS17.0, before doing the factor analysis this study

adopts KMO and Bartlett sphere test such two kinds of the most popular validity testing method. Then we find the result by measuring the reliability of the detection index of smart tourism's core value research (see table 1).

**Table 1 KMO and Bartlett's test.**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.943
Bartlett's Test of Sphericity	Approx. Chi-Square	3696.903
	df	351
	Sig.	.000

We can know from data analysis that KMO reaches 0.943, indicating that the sample is appropriate which is very suitable for factor analysis. Besides that, Bartlett's spherical degree test P value is zero, which reach a significant level also means the sample data is very suitable for factor analysis.

#### 4.2 Exploratory factor analysis

**Table 2 Total variance explained.**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.511	42.633	42.633	4.193	15.528	15.528
2	1.622	6.007	48.640	3.819	14.145	29.673
3	1.304	4.828	53.468	3.291	12.188	41.861
4	1.154	4.272	57.741	2.993	11.086	52.947
5	1.061	3.928	61.669	2.355	8.722	61.669
6	.939	3.477	65.146			
7	.880	3.259	68.405			
8	.789	2.924	71.329			
9	.750	2.778	74.108			
10	.672	2.489	76.597			
11	.617	2.283	78.880			
12	.562	2.081	80.961			
13	.550	2.037	82.998			
14	.494	1.831	84.828			
15	.471	1.743	86.571			
16	.418	1.547	88.118			
17	.402	1.491	89.609			
18	.374	1.387	90.996			
19	.359	1.331	92.327			
20	.331	1.227	93.554			
21	.308	1.139	94.693			
22	.282	1.045	95.738			
23	.266	.987	96.724			
24	.245	.908	97.632			
25	.224	.829	98.461			
26	.217	.805	99.266			
27	.198	.734	100.000			

**Extraction Method: Principal Component Analysis.**

As the result is shown in Table2, the five common factors contributing rate of cumulative sums of squares is 61.669%. These five common factors replaced the item of 27 in questionnaire, which explained over 60% of information. It can be considered that the five common factors have high level of interpretation and provide the basis for further analysis.

In order to explain the meaning of the five common factors, we proceeded varimax rotation method on factor load matrix. We named the common factors according to the item contents. The rotated component matrix is in table 3.

**Table 3 Rotated Component Matrix**

	Component				
	1	2	3	4	5
1	<b>.735</b>	.193	.221	.133	.138
5	<b>.679</b>	.327	.187	.126	.069
2	<b>.666</b>	.119	.280	.242	.154
3	<b>.650</b>	.275	.284	.205	-.009
6	<b>.619</b>	.203	.200	.183	.122
4	<b>.601</b>	.398	.109	.175	.024
14	.306	<b>.736</b>	.130	.104	.110
15	.135	<b>.596</b>	.386	.152	.157
16	.225	<b>.559</b>	.281	.049	.088
17	.050	<b>.557</b>	.188	.223	.050
18	.170	<b>.504</b>	.354	.394	.030
21	.327	.197	<b>.736</b>	.072	.035
22	.199	.097	<b>.710</b>	.347	.083
20	.363	.249	<b>.636</b>	.155	.199
24	.291	.348	<b>.549</b>	.364	.216
23	.255	.210	<b>.544</b>	.198	.231
19	.309	.336	<b>.542</b>	.263	.187
8	.217	.165	.189	<b>.784</b>	.200
13	.268	.100	.255	<b>.710</b>	.067
12	.255	.208	.080	<b>.690</b>	.170
9	.308	.281	.240	<b>.619</b>	.028
7	.047	.096	.188	<b>.591</b>	.155
10	.274	.329	.210	<b>.585</b>	.086
11	.315	.311	.080	<b>.507</b>	.220
26	.024	.135	.083	.058	<b>.835</b>
25	.269	.007	-.036	.276	<b>.740</b>
27	.053	.310	.241	-.015	<b>.718</b>

**Extraction Method: Principal Component Analysis.**

**Rotation Method: Varimax with Kaiser Normalization.**

**a. Rotation converged in 8 iterations.**

We can see from the factor load matrix in Table 3, all of item factor loading of common factors are between 0.507 to 0.835 and the factor loading on other common factors are all less than 0.5. There is no cross factor

loading phenomenon and achieved ideal result.

We named these five common factors according to various factors items and factor loading.

From the contribution of the variance, the first common factor which contained six high load factors explained 15.528% of the information, which states how smart tourism improved the tourists' experience, so it can be named "experience value". The second common factor which contained five high load factors explained 14.145 of the information, which states how smart tourism affected the tourists' perception, so it can be named "information value". The third common factor which contained six high load factors which states how smart tourism affected tourists perception in the aspect of value enhancement compared with the traditional one, so it can be named "innovation value". The fourth common factor which contained seven high load factors which states how smart tourism affected tourists' perception in the aspect of function and service, so it can be named "function value". The fifth common factor which contained three high load factors explain of the information, which states how smart tourism affected tourists' perception in the aspect of price and risk, so it can be named "cost value".

## **5. THE INTERPRETATION OF THE SMART TOURISM'S VALUES**

### **5.1 The further supplementing and perfecting the study of smart tourism**

As the way of driving tourism industry innovation, smart tourism development has seen a rapid development these years and aroused a vast concern all over the world. But the smart tourism in China is still in its initial stage and most studies still stays in the simple phenomenon description, containing and development strategy period. Thus the research achievement is not perfect. This article made an effective summary based on the existing research results and established the core value model of smart tourism. It further supplements and perfects the related research of smart tourism.

### **5.2 Providing the basis for tourism administration in policy-making**

The paper motivated the administrations for well-optimized and coordination of tourism resources through analyzing the development status and core values, thus engaged its disciplining function in public information services. At the same, it impel the transformation of supervision and management mode in tourism-related businesses, that is from the original passive management and manages afterward to process management and dynamic management. It achieved the further improvement of administrative service ability.

### **5.3 Providing guidance for tourism enterprises in improving the tourist experience**

The discussion of smart tourism core value will be based on tourists perception so that significantly improve the tourism experience and tourist satisfaction, decrease the cost of tourism enterprise and make the whole tourism industry achieved a better development. The promotion of smart tourism core value will expand the tourism enterprises reception and service ability from the aspects of service content, improve the information supply ability from the aspects of service quality and drive the tourism product update and marketing change from the aspects of tourism marketing.

## **6. CONCLUSION**

Under the background of high speed integration development in tourism industry and information industry, this article is dedicated to study the core value of smart tourism. Nowadays, the smart tourism construction is taking place throughout the country and the theoretical research begins to flourish which foretells the bright prospects. Smart tourism is the future development trend of world tourism industry, and it is also the strategic demands of Chinese tourism industry transformation and upgrading. Strengthen the development of technology and application mode in smart tourism and improved the personnel training will be beneficial to the Chinese tourism development. It is good for China to have competitive advantage in the world tourism industry structure

and also it is helpful to improve the Chinese tourism service and service quality. In one word, it has broad development and application prospects.

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