Research Article
The Core Competitiveness of the Wisdom Tourism Food Analyses Based on the Internet of Things

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Abstract: As the world's largest industry, the tourism Food industry of the world has rapidly developed in recent years. Transferring "digital food" to "wisdom food" means new opportunities and challenges that the sustainable development of the food should face. However, the informational development of this industry still lags behind, the exploitation and utilization of information resources haven't owned an effective platform, which lack of a benign circulation and interactive mechanism, therefore, to combine the IOT with the food about wisdom has always been a new tendency. This study constructed framework of the tourism Food core competitiveness based on IOT. Then, this study proposed a measurement model for the tourism Food core competitiveness and test the model through exploratory and confirmatory factor analysis, the indicators demonstrate that the model is effective and present that resource protection ability, operation management ability, service ability and Tourism Food service chain integration ability all have influence on the tourism Food core competitiveness.

Keywords: Core competitiveness, exploratory and confirmatory factor analysis, IOT

INTRODUCTION

Along with the tourism Food industry promoting the development of the regional economy, it has also brought large negative impact on the ecological environment and social culture. How to realize the coordinating development of the economic effectiveness, the social effectiveness and the ecological effectiveness, just namely the realization of the sustainable development of the food, has become a hot topic in the world. In order to improve the core competitiveness of this industry, remit and solve the numerous problems the industry has faced and then to realize the sustainable development, this study not only analyzes the relationship about resources of the food and core competitiveness, the technology of the IOT and competitive advantage, but also constructs the framework in view of the core competitiveness on the wisdom of the tourism Food spot of the IOT, which is to provide one route of improving the ability of environmental protection and resource allocation, reducing the consumption of resources and energy and enhancing the core competition ability of tourism Food spots and then to realize the sustainable development of tourism Food spots.

To sum up, in the new historical period, any countries' orientation for the Tourism Food industry has also determined the positioning for industries of the food, which has brought about good opportunities for the development of Tourism Food and tourism Food spot. However, new opportunities also raise new challenges for administrative staff of the food. Only combining advanced science technology and management technology can effectively enhance the development levels of the food and then solve the strategic problems of development in the food. Therefore, it is of great importance to research the application of the IOT to the protection and management in the food.

MATERIALS AND METHODS

The current situation of research about application of the internet of things: Those main problems the tourism Food industry needs to solve are as followed: paying equal attention to protecting tourism Food resources and developing tourism Food, strengthening the construction of tourism Food infrastructure, highlighting the special tourism Food, promoting diversification of tourism Food products, vigorously developing and promoting ecological tourism Food and promoting the development of cultural tourism Food and red tourism Food. These problems are closely in relation to developments of the food, which need be promoted and completed through the development of the food. To strengthen the industry service system and to improve the service quality also puts forward new requirements for the development of the tourism Food spot. Therefore, the food must bear the burden to develop the national tourism Food industry, regarding the food development as the core point, to promote the

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sustainable development of China's tourism Food industry.

As the core point of tourism Food's development, to develop the food under the new circumstance has also taken a new kind of responsibilities and obligations: how to effectively solve the issue about the environmental protection and economic development, how to make the management level of the food move on a higher stage, how to further improve the quality of service of the tourism Food spot, how to fundamentally ameliorate the industry consumption environment, how to solve those series of problems and then to meet the requirements of the development of the tourism Food industry could be an important task for administrator in the food.

An important way to improve the core competitiveness of one industry is to comprehensively improve the level of Informatization. The IOT is a collection of information technology and promoting the development of the IOT's technology is an effective way to improve the information level. We should set about it to promote the development of the IOT's technology from the two aspects and one is to accelerate the research about the IOT's technology and the formulation of those related standards; the other is to promote the application of the IOT's technology in critical foods. To impel the adhibition of the IOT's technology in the tourism Food industry could point out a quite good direction on development for the food and also provide new ideas for the developing strategies.

Regarding information construction as the main way and improving the efficiency of travel service are directions of tourism Food development. Along with the developments of science and technology, to transform industrial structure of tourism Food by means of information technology and to improve the efficiency of tourism Food industry has become a tendency under the conditions of new technologies. The revolution of management modes brought by new technology could effectively excavate the formats and consumption demands of tourism Food, which will greatly promote transformation of the service forms and the innovation of business models.

Information technology has become the technological bases for the sustainable development of tourism Food. The transformation and upgrade of informatization about tourism Food industry needs the efficiency of information and service levels of Tourism Food require the effective support of informatization, besides, the harmonious developments of regional Tourism Food acquire the reliable guarantee of informatization. The continuous development of information technology has revolutionary effects on the management, marketing and service of the Tourism Food, which provide strong support and forceful power for the development with respect to integrated services of the Tourism Food activities in any segments.

The concept of the IOT was firstly proposed by the Massachusetts Institute of Technology (MIT) in the 1999's international conference on mobile computer and network in the United States and in 2005 the International Telecommunications Union (ITU) issued the 2005's report of ITU Internet: the Internet of things report. International Telecommunication Union UIT (2005), which has put forward that the IOT is mainly composed of four key technologies: RFID technology, sensor technology, intelligent technology and nanotechnology. In recent years, along with IOT having become a pop research topic, many scholars have made a research about it, while the research and development of it have been still in its infancy, as for its orientation and characteristics, we China have not unified, on account of the system model and structure of it having not formed one standard, there are a lot of technological problems for us has to solve. Seeing from the developing process of the IOT, the developing stage of the IOT is one single stage and a large number of single IOTs constructed separately are the starting point for construction and the basic elements of the IOT. Only after the single IOT fully developing, can we realize the cross-domain collaboration and deep-links of the Internet of things.

In 2006, America's Great Wolf Resorts Company introducing RFID technology into Tourism Food management, established the RFID wristbands system in the tourist resort of Pocono mountains. Wearing the RFID wristbands can not only confirm the identity of visitors, but also help visitors pay fees in the tourist zone. Therefore, tourists in the tourist zone need not carry anything such as cash or keys and then they can also be pleasant to experience in Tourism Food activities. Bi *et al.* (2010) and others point out that in China, the RFID technology has been widely used in other industries, but the application to the Tourism Food industry has just started, mostly staying in the stage of electronic ticket, besides, to monitor the crowd density and research the Tourism Food traceability are still lacking. At present, information construction of tourism Food spots in China has already rapidly developed and digital building has gradually expanded and the applications of RFID have developed from the original ideas of tickets to the tour of ideas. The establishment of digital tourism Food spot still stays in the level of video monitoring, the RFID technology has not been fully used. Lin (2011) applied the Internet of Things in the Tourism Food management and introduced the principal and technologies of IOT, moreover, the research illustrated the design of the intelligent monitoring system. Yao and Lin (2011) and other people think that the key point is to integrate resources to promote the Tourism Food informatization level in Hainan with the application of the Internet of Things technology, combining Tourism Food environment of Hainan island with its own situation, the author analyzes the SWOT issue about the application of the IOT technology in Hainan island.

Zhou *et al*. (2012) and others have applied the IOT technology to design the virtual Forbidden City and then realized the whole simulation of time and space of the virtual landscape of the Forbidden City, which could help visitors get experience in real landscape through this system. Based on the analysis about current situation of the Tourism Food information service in China, Du (2012) has made a research about the developing levels of Tourism Food informatization in China and he points out that, in the process of informatization development of China's Tourism Food industry, it lacks overall awareness and we should build an intelligent public service platform with the mobile communication technology and the IOT technology.

Seeing from the achievements of literature research, the applied research of the IOT has made certain progress, such as in the warehousing logistics, medical care, remote monitoring, remote sensing system, urban planning and intelligent transportation systems, which shows its great application value and will play an important and potential role. The IOT has been developing until now, its core research has gradually shifted from the basic researches to the researches about solutions and product.

Tourism Food industry is a complex system, mainly including the six key elements: food, accommodation, transportation, traveling, shopping and entertainment, which cover several aspects in social life, such as warehousing, logistics, medical, food, transportation, environmental protection, safety. The IOT technology, applied in other industries, has laid a good foundation for its application to the Tourism Food industry. Because food is the core elements of Tourism Food industry, it's more urgent to apply the IOT technology to the tourism Food spot and the tourism Food spot is also ideal application scene for the IOT technology.

At present, the application of IOT to the Tourism Food industry has just started, then there will still exist larger development space. Comprehensively introducing the IOT technology into the Tourism Food industry, especially reforming traditional and backward Tourism Food industrial structure with this technology, there is still a long way to go. Therefore, research concerning the IOT's application to tourism Food spots will be an inevitable trend in the research of the application of the Internet of things.

The wisdom tourism food spot: The construction of wisdom food is an engineering system of intricacy, which needs to make use of modern information technology and also needs to be integrated with the management theory of science and information technology. Construction wisdom for the tourism Food spot is to fully enhance its hard and soft power, create learning organization that owns an internal knowledge base to make decisions and ratiocinate. Informatization

construction and the optimization for business process can help the food to get the more thorough awareness and wider inter-connectivity and improve the managerial efficiency and tourists' satisfaction (Barney, 1991). Only combining advanced science technology and managerial technology can effectively improve the development level of foods and solve the strategic problems for the development of foods. The IOT provides an information platform for building the wisdom of tourism Food spots, thus the research about its application modes to the tourism Food spot protection and management is particularly important.

The core competitiveness of wisdom tourism food spot: According to Barney's classification about enterprise resources (Prahalad and Hamel, 1990), the author believes that the resources of the foods can be divided into material capital resources, human capital and organizational capital resources. Material capital resources in foods include natural environment, tourist attractions, tourist facilities and production management techniques; Human capital resources of the food include those related to the people's thoughts, intelligence, experience, training and others; While the organization capital resources include management patterns, plans, control and the coordination system, as well as informal contacts between tourism Food spots and foods.

The tourist resources in food are the core material capitals, which contains tourist attractions, natural environment and Tourism Food infrastructure. The stand or fall of Tourism Food resources, can directly affect tourists' attitude towards the food, which is the foundation of the survival and development of the food, therefore, reasonable development and protection of Tourism Food resources, could be of vital importance to develop the food and then protective abilities on tourism Food resources have become the first and core competitiveness of the food.

The important content to operate and manage the food is to make human capital resources and organizational capital resources become strategic resources of the tourism Food spot. Operation and management abilities affect it that whether the organization, planning, control, coordination system can be operating normally and efficiently, which also determine whether human and organizational capital resources will become strategic resources to develop the food. Therefore, the abilities to operate and manage the tourism Food spot are one of the important core competences to develop the tourism Food spot.

Service facilities and service projects provided by foods can directly affect the effects when tourists experience them on the spot and also directly influence the tourists' satisfaction with the tourism Food spot, which will affect the competitive ability of the tourism Food spot. Thus, providing good facilities for tourist

service and service content would be an important way to improve the competition ability and service abilities in the tourism Food spot are also the core competitiveness for necessary development.

According to Prahalad's view, we can understand that the real source of the enterprise's competition is the core competence of enterprises. Short-term competitive advantages come from the control of cost and quality about products, however, the long-term advantages are from establishing the core system as soon as possible than its competitors at low cost. Core competence of the enterprise's ability is to integrate technology, which is also to organize the work and transmit the value. Only the staff in the food has the ability to integrate technology and production skills into core competitiveness, which would help them timely grasp the opportunity to make changes. And it is the true source of competitive advantages. On the basis of the above discussion, protection abilities, operation and management abilities and service ability are important sources of competitive advantages.

The IOT and the core competitiveness in the tourism food spot:

Protection in the tourism food spot and the IOT: To protect Tourism Food resources and the natural environment, the first thing is to solve the problem of Tourism Food resources and environmental monitoring. In order to effectively protect Tourism Food resources and the natural environment, it is necessary to monitor the protection objects timely and get the data real-time transmitted, collected, analyzed and processed, which is impossible to be completed only by human forces. Besides, as for those changes about for plant diseases, insect pests, water quality and air quality, which are not very obvious changes people couldn't find in a timely manner, of course, this kind of change that can be found is one that may have caused serious damage to protect this object. So it must be achieved by means of comprehensive information technology. At present, the domestic and overseas have already had many cases of the IOT about environmental protection, which have played a huge role in the natural disaster monitoring, pollution control, ecological protection. And now The IOT technology has become the basic support in the field of environmental protection.

Operation and management in the tourism food spot and the IOT: In new type of management mode, information management is the technological nature of management, the structure, classification and the access of management information decide the organizational structure and managerial patterns under the circumstance of new technology. Operational management in foods involves large amounts of manpower, scheduling and allocating material resources, which produces a large amount of information, the speed that information transfers in the internal food determines the efficiency of management in foods. Introducing the IOT technology can accelerate the transmission of information in internal foods and timely respond to external environment and then provides support for the staff in foods. Therefore, this technology is one necessary guarantee to improve efficiency about operation and management in foods.

Service in the tourism food spot and the IOT: Foods offer visitors services in ticket business, narration, complaints handling, security, diet, accommodation, transport and other aspects, whether they could be convenient to buy tickets, accurate guidance, good complaining channels and quick complaints disposal, security guarantee, timely release of accommodation and traffic information, could effectively improve tourists' satisfaction. All of these need foods to improve the speed to obtain the information, transmit and process it. In order to lessen tourists' time to congest and wait in a line in the tourism Food spot, we need foods own the ability to forecast and dispatch, which can be achieved by the IOT technology.

Integration of tourism food service chain and the IOT: Tourism Food service chain integration mode based on Internet of things is the internal resources of the food, internal capacity building models of another important supplement, in the Internet of things technology support mode of vertical integration strategy, under the use of the Internet of things technology platform, the tourism Food spot with catering, accommodation, transportation, shopping malls, entertainment companies such as Tourism Food related businesses sharing in the process of "eat, live, walk, travel, shopping, entertainment" all aspects of information, thus to guide and control of various behavior of tourists, in order to understand the relevant information, the tourists for visitors to provide a comprehensive range of services, improving the satisfaction of the tourists, form the core competitive edge of the tourism Food spot.

The framework of the core competitiveness of the wisdom foods based on the IOT: The framework of the core competitiveness of wisdom food based on the IOT is shown in Fig. 1.

Equipment layer of wisdom food: This layer is the nerve ending of wisdom, including all kinds of environmental parameters: sensor nodes, RFID, mobile phone APP, PDA, surveillance cameras, 3 s (GPS, GIS, RS), etc.
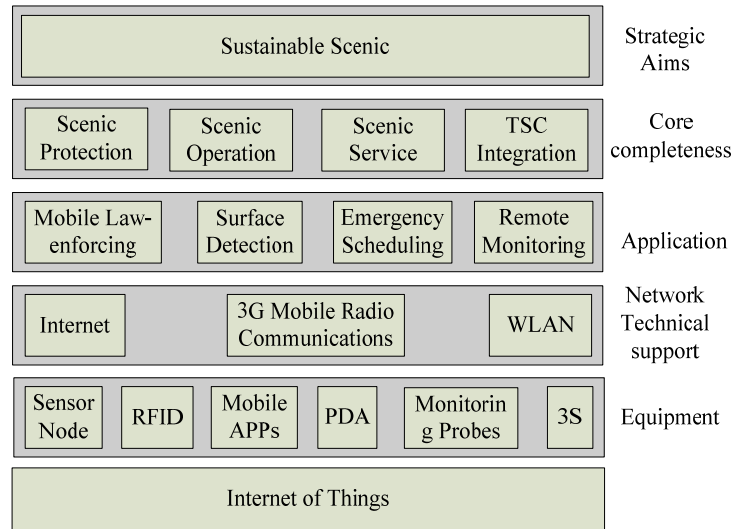
Fig. 1: The framework of the core competitiveness of wisdom food based on the IOT

Technical support layer of basic network of wisdom food: Including wireless sensor network, P2P grid, grid computing network and cloud computing, which is the fusion of the network and communication technology guarantee.

Infrastructure network layer of wisdom food: Which refers to the Internet network, the wireless local food network, 3 g mobile communication network.

Application layer of wisdom food: Which includes the application of mobile law enforcement, surface monitoring, emergency scheduling and remote monitoring in the tourism Food spots.

The core competitiveness layer of wisdom food: The purpose of construction of the wisdom food about the IOT is to improve the core competitiveness of foods, including protection abilities of foods, operation and management abilities, service abilities of foods and integration ability of Tourism Food service chain, finally realizing the strategic target of the sustainable development in tourism Food spots.

RESULTS AND DISCUSSION

Model: The tourism Food core competitiveness is consist of resource protection ability, operation management ability, service ability and integration ability of Tourism Food service chain. The tourism Food can improve the core competitiveness from the four aspects, which can expand the influence of the tourism Food, enhance the attraction and the service ability for tourists and then improve the tourists' satisfactory. All of this can promote the development of the tourism Food and enhance the advantages. Furthermore, it can realize the strategic objectives to
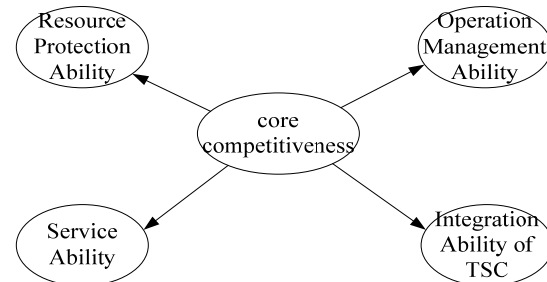

Fig. 2: Tourism food core competitiveness model

the sustainable development. Tourism Food core competitiveness model is as shown in Fig. 2.

Participants: This paper studies various influencing factors of tourism Food core competitiveness and plays an anonymous questionnaire survey, questionnaire 341, recycling questionnaire 322, recovery rate is 94.4%. Eliminating the invalid questionnaire 21, effective questionnaire recovery rate 93.8%. The main objects of questionnaire are the Tourism Food researchers, food managers, Tourism Food enterprise managers, enterprise management personnel, etc. Five-point Likert scale is adopted, score from 1 to 5, the higher the score represents influence value is higher, the stronger the feeling.

Exploratory factor analysis: Principal Axis Factoring was performed on the full set of items intended to measure Integration Ability of Tourism Food Service Chain, Resource Protection Ability, Operation Management Ability and Service Ability. Principal Axis Factoring is the most appropriate approach. Bartlett's test of sphericity was 1318.428 (p<0.001) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.825 which is well above the

Table 1: RMR, GFI, AGFI, PGFI

Model	RMR	GFI	AGFI	PGFI
Default model	0.019	0.956	0.937	0.665
Saturated model	0.000	1.000		
Independence model	0.114	0.485	0.405	0.420

recommended index of 0.6. Table 1 show that the cumulative percentage of variance of the factors was 64.536%.

From Table 2, the measurement model of tourism Food core competitiveness can be shown as Fig. 3.

Test of factor loading significance: After Input the sample data into the measurement model of tourism Food core competitiveness and calculated by AMOS, the model can be identified. The estimates model is shown in Fig. 4.

Test of the measurement model fitting: Table 3 indicate the chi-square CMIN/DF = 1.298<5 and is greater than 1, the value of p<0.05. So the measurement model satisfies the chi-square test and p value test very well.

From Table 1, we can see that Residuals and square root RMR = 0.019<0.05, GFI = 0.956 and AGFI = 0.937 are both greater than 0.9, which demonstrate the path diagram of the model fits the actual data well. From the data, it's no doubt the model satisfy the condition of RMR, GFI, AGFI and PGFI.

As shown in Table 4, NFI = 0.929, RFI = 0.912, IFI = 0.983, TLI = 978 and CFI = 0.983, all the indicators of the model are greater than 0.9, which also indicates that the path diagram of the model fits the actual data well.

Test of the validity: To validate our measurement model Convergent validity is assured by examining Composite Reliability (CR) and Average Variance Extracted (AVE) from the measures.

In the literature, it is well acknowledged that if the value of CR and AVE are greater than 0.7 and 0.5, respectively, the validity of the measurement model is good. From Table 5, we can see that, our Composite Reliabilities (CR), ranging from 0.8081 to 0.8537, all exceed the recommend threshold of 0.7. Furthermore,

Table 2: Result of the validity test for each variable

| Items	Factor loading	Variance extracted (%)	Reliability
Integration ability of tourism food service chain			
(TSC1) flexibility of product	0.797	31.050	0.813
(TSC2) development of new tourism food product	0.781		
(TSC3) level of informatization platform	0.748		
(TSC4) support of technology	0.692		
(TSC5) sell cost	0.631		
Resource protection ability			
(P1) integration of resource	0.827	12.375	0.775
(P2) reasonability of exploitation	0.808		
(P3) environmental adaptation	0.803		
Operation management ability			
(O1) human resource	0.834	11.060	0.687
(O2) financial capacity	0.810		
(O3) marketing capability	0.780		
Service ability			
(S1) reception scale	0.795	10.051	0.798
(S2) service quality	0.786		
(S3) service facilities construction	0.710		
Total scale reliability	0.824		
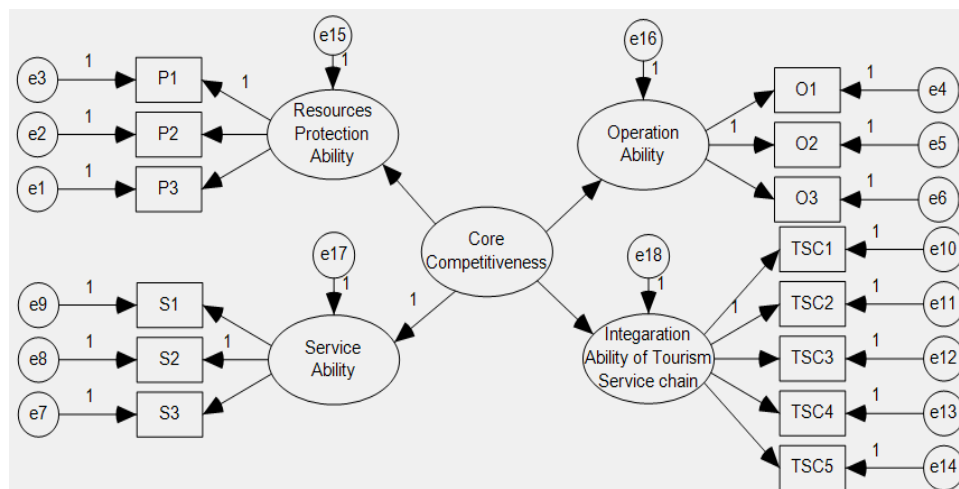
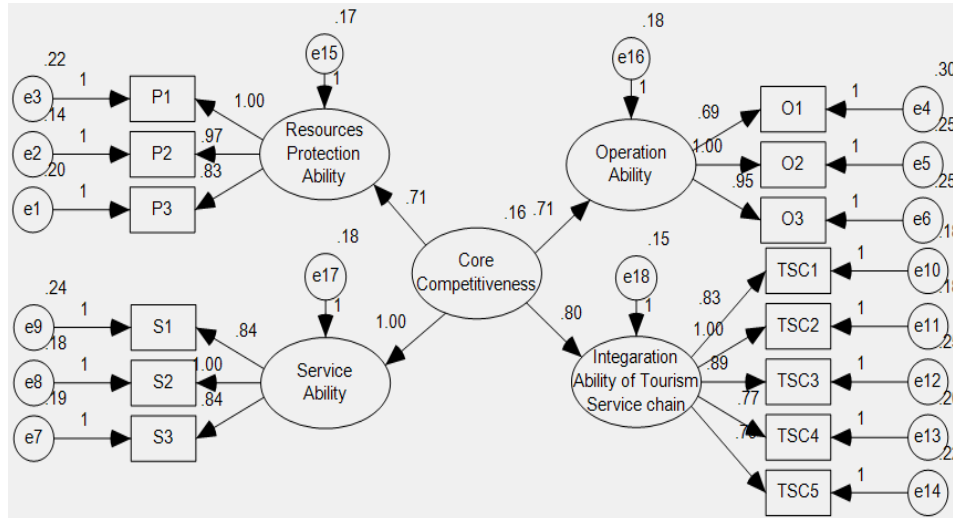
Fig. 3: The measurement model of tourism food core competitiveness

Fig. 4: Estimates of the measurement model of tourism food core competitiveness

Table 3: CMIN

Model	NPAR	CMIN	DF	p	CMIN/DF
Default model	32	94.760	73	0.044	1.298
Saturated model	105	0.000	0		
Independence model	14	1343.050	91	0.000	14.759

Table 4: Baseline comparisons

Model	NFI delta 1	RFI rho 1	IFI delta 2	TLI rho 2	CFI
Default model	0.929	0.912	0.983	0.978	0.983
Saturated model	1.000		1.000		1.000
Independence model	0.000	0.000	0.000	0.000	0.000

Table 5: Composite Reliability (CR), Average Variance Extracted (AVE)

	CR	AVE
TSC	0.8517	0.5363
P	0.8537	0.6605
S	0.8496	0.6534
O	0.8081	0.5846

the Average Variances Extracted (AVE) range from 0.5363 to 0.6605, which are also above the acceptable value of 0.50.

From all the above tests for our model, it is obvious that all the test are satisfied. So we can summarized that our model are acceptable.

CONCLUSION

This study proposes a new tourism Food core competitiveness measurement model, which presents resource protection ability, operation management ability, service ability and Tourism Food service chain integration ability are the main factors of core competitiveness. Through exploratory and confirmatory factor analysis, a conclusion can be drew that the model is efficient.

The direction of the food is to build the wisdom food based on the IOT. New technology can bring new management modes, new forms of Tourism Food industry and new consumption and demand and information construction of foods has become a basic link for construction of foods. The IOT technology provides the technical support for wisdom food, which needs more thorough perception, a wider range of connectivity and more intelligent wisdom technology and then it could supply guarantee to maintain and develop the core competitiveness of the food.

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