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Coupling Mechanism of the Tourism Industrial Network Based on Circular Economy

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Abstract This paper summarizes the research situation of circular economy and tourism industrial network at home and abroad, introduces the concept and characteristics of tourism industrial network, and analyzes the coupling mechanism of tourism industrial network based on circular economy.

Key words Circular economy; Tourism industrial network; Coupling mechanism

Tourism, an emerging industry, developed rapidly after the Second World War, and has become an important industry for countries all over world. Because tourism industry itself has relatively small damage to environment, tourism was once considered as a "smokeless industry". And governments around the world have attached great importance to it. However, traditional tourism industry continues to follow the developmental mode and management thought of industrial revolution. Predatory development and utilization of tourism resources are implemented, so that tourism activities exceeds the bearing capacity of natural environment, damages the ecological environment of tourist destination, and hampers the sustainable development of tourism industry.

Since entering the 21st century, tourism industry has become an important pillar industry in increasing income, improving the industrial structure, and promoting regional economic development and social progress in many areas of China. However, rapid development of tourism has brought real destructiveness and potential threats for the sustainable development of environment. Tourism development and construction, tourist activities, and some non-tourism activities have damaged the tourism resources and tourism environment at different degrees. If these issues can not be solved effectively, they will not only threat the ecological environment in tourist areas, but also will affect the development of tourism industry itself. With the continuous deepening of circular economy, it is of strong theoretical and practical significance to study on the operation mode of circular economy in tourism industry, to promote the transformation of tourism industry, to optimize the development and protection of tourism resources, and to promote the sustainable development of tourism industry.

1 Tourism circular economy and tourism industry network

1.1 Research situation of tourism circular economy at home and abroad At present, foreign countries have no relevant research and practice about tourism circular economy, but circular economy was applied in tourism in foreign countries as early as the 1980s. It appears in the eco-tourism, green tourism, nature tourism and alternative tourism during the 1980s and 1990s. The idea of circular economy is reflected in the tourism activity management, development and protection of tourism resources, and so on. At present, application of foreign circular economy in tourism industry is mainly embodied in the protection of tourism resources and the management of tourism activity in the form of laws and regulations^[1]. While research and practice of tourism circular economy in China started from the end of the 1990s. According to theoretical study, the main content can be divided into the research on basic connotation and related concept, significance and function research of the development of tourism circular economy, development strategies and countermeasures research, construction of operation system and mode, applied research on regional tourism development, applied research on tourism enterprises, scientific and technological support system and so on. From the aspects of the application of circular economy concept in tourism industry, tourism destinations in China have more or less followed the principles of circular economy during the process of tourism management, and development and utilization of tourism resources since the end of the 1990s^[2].

1.2 Research status of tourism industrial network There are many achievements in researches on industrial network in foreign countries. Hakansson first studies the evolution of industrial network in the year 1992; Luis Araujo et al. advance the evolution model of industrial network in 1997. Based on this, Wilkinson puts forward the dynamic structure model of changes in industrial network in the year 2000; Carlos Melo Brito studies on the dynamic organizational structure theory of industrial network in 2001; Christer Karlsson researches on the

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development of industrial network from the aspect of management^[3-8]. Meanwhile, research on industrial network in China is still in its initial stage, but has obtained certain achievements^[9-10]. However, research results on tourism industrial network are few in China; and only a few scholars carry out a preliminary study on tourism industry chain and network operation of tourism enterprises^[11-13].

To sum up, researches on tourism industrial network and tourism circular economy are still in development stage in China. And there are many issues worthy of further exploration. Therefore, it has extremely far-reaching significance to guide the construction and operation of tourism industrial network, and to improve the overall competitiveness by using theory and practice of circular economy.

1.3 Concept and characteristics of tourism industrial network

1.3.1 Concept of tourism industrial network. According to the definition of industrial network and its formation condition, we conclude that tourism industrial network refers to a network relationship between travel agencies, restaurants, hotels, tourist attractions, tourism transportation, tourism commodity and other industries in order to meet the needs of tourists. It is a group of business organization, intermediary organization, academic institution and governmental organization, having their own unique resources and being interdependence of each other's resources with the owner of tourist attraction as the core. Industrial network can realize the travel and tour between source region and destination by interpersonal trust, capital or information exchange, enterprises combination, strategic alliance, and cooperative relations of specialization division and resource complementary, so that it can sale tourism products directly or indirectly to tourists in the modes of retail or package.

1.3.2 Elements and characteristic analysis of the tourism industrial network. Like other industrial networks, tourism industrial network has three elements composition: actor, activity and resource. Actor is the main body of tourism industrial network, not only including tourists and the people offering various services, but also government, academic and research institutions, education and training organizations in a broader scope. Activity is the general name of various economic activities during tourism, mainly the process of the flow of material and information resources among actors. This process is accompanied by the formation of value added and value chain of product value or service value. The third element resource mainly includes material resources, financial assets, human resources and information resources. In a broader sense, the relationship between the actors is also a kind of resource. These three elements are interrelated and indispensable. Generally speaking, actor is the main body to control resources and accomplish activities. It constitutes network through carrying out activities and utilizing resource production relationship. Activity is the behavior of actors to transform one resources to another using different ways. It is the expression form of the resources exchange between actors. Resource is the media to complete the actor's activities; the aim of actor is to exchange resources.

Tourism industrial network is a platform of the relationship between tourists and people who offer services. Vertically, it reflects the industrial chain structure of tourism products from planning to construction, sales, and then to tourists consumption. Service exchange and value added process of product among tourism intermediaries, transporters, wholesalers and retailers are embedded in this chain structure. Therefore, vertical industrial network is more like a value chain or supply chain. Transversally, actors in the same link of product chain have the relationship of competition and cooperation. Taking the travel agent as an example, there are few tourists in slack season. And travel agents have to compete for tourist resources. Therefore, travel agencies show a competitive relationship. But when peak season comes, travel agencies usually show a relationship of cooperation in order to rationally allocate resources, and to achieve maximum benefits.

1.3.3 Characteristics of tourism industrial network.

(1) Owners of tourism attraction (scenic spot) and tourist are the core of tourism industrial network. Tourism attraction (scenic spot) is the determinant factor attracting visitors to come. Without tourism attraction (scenic spot) and tourist, the existence of travel agencies, restaurants, hotels, tourism transportation, and tourist commodities will no longer be meaningful.

(2) Enterprises in tourism industrial network have their own unique resources, but they also need to rely on other resources, such as, symbiosis. Relationships between node enterprises in tourism industrial network are neither direct competition nor mutual inhibition, but mutually benefit and co-existence. Each enterprise can obtain benefit from resources exchange. A node in tourism industrial network usually shows the competitive relationship in different enterprises, and is rarely cooperation.

(3) Tourism industrial network is a more advanced form of tourism industry chain. Tourism industry chain emphasizes the transversal relationship, that is, all the enterprises in the chain face consumers at the same time. However, Tourism industrial network pay attention to both transversal and vertical relationships. Besides, element of actor in the tourism industrial network has broader content than in the tourism industry chain, such as government, intermediary organizations, education and training organizations^[14].

(4) Tourism industrial network spans a larger space, and is basically free from regional restrictions.

(5) Unlike other industrial networks, output of tourism industrial network is mainly service, but not tangible product. More importantly, visitors participate in the whole production and consumption process of service. Therefore, visitor is also a node unit in the whole industrial network.

2 Coupling mechanism of tourism industrial network based on circular economy

2.1 Connotation of the coupling of tourism industrial network Connotation of coupling has many different defining and understanding. Coupling in physics refers to the phenomenon of close co-operation and mutual influence between input and

output in two or more circuit elements or networks, and energy transmission from one side to another by interaction. Its connotation is that all parties of coupling restrict or select, cooperate or enlarge each other by material, energy and information exchange. Connotation of coupling indicates that the basic premise of coupling is the existence of certain correlation in all parties. Secondly, result of coupling is the change of properties in all parties (the original properties will be narrowed or enlarged). Later, the concept of coupling is cited by biology, ecology, economics and other disciplines. Coupling in this paper mainly refers to development in the same direction due to the interaction, mutual restraint, and mutual influence among node enterprises and different layers of tourism industrial network.

2.2 Coupling content and mode of tourism industrial network based on circular economy Each system has its own mechanism, structure and mode to run. Tourism industrial network also has its own self-running mechanism, structure and mode. Generally speaking, tourism industrial network consists of three layers: core layer, which is the tourism attraction enterprises and tourists, service layer consisting of travel agents, restaurants, hotels, tourism transportation, and retailers of tourist commodities, support layer composed of government, academic institutions, educational institutions, and other related industries. These three layers mainly have three coupling modes, which are the vertical coupling between network node enterprise and its relevant industry, the transversal coupling among node enterprises within network, and the coupling among different layers within network. Superposition of the coupling units of three modes mentioned above can form a complete coupling unit of tourism industrial network. And the coupling units of three modes are not independent, but are closely linked to each other on the basis of economic transaction, industrial relationship and knowledge sharing. Status of one coupling unit affects other two, and influences the coupling function at each layer. High degree of coupling of elements in all levels of the network structure can improve the functions of sub-network system and the whole industrial network system, and enhance its own profits at the same time.

(1) Material coupling among node enterprises in tourism industrial network and among the vertically related industries. Material coupling includes the material transformation and exchange, waste exchange and recycling within node enterprises. During the process of material coupling, the upstream and downstream relations among the members should be determined. In accordance with the requirements of the material supply and demand sides, routes, flow rate and composition of material flow are adjusted, so as to complete the construction of industry coupling chain. At the same time, resources recycling and cascade use should be taken into account in order to reduce the consumption of material resources to the maximum. An integrated resource recycling system to support system operation needed to be established to achieve material coupling. Besides, harmless central treatment system can be established, such as construction of ecological scenic spot, to lower

the impact of environment and to improve scale benefit.

(2) Transversal service coupling among node enterprises in tourism industrial network. Offering services to tourists is the major function of tourism industry. Transversal relationship in tourism industrial network is node enterprises together facing the tourists. They obtain their own interests when offering service. Therefore, each node enterprise often shows the situation of competition during the process of tourism. However, tourists buy not only a visible service of one node enterprises, but also all the visible services, information, care and other elements comprising the "service products" combination of all the node enterprises. In this sense, any of the node enterprise is not isolated in the tourism industrial network, and its service quality affects the interests of other node enterprises in network. Therefore, service coupling among node enterprises in tourism industrial network becomes inevitable.

Service coupling requires all the node enterprises in tourism industrial network to accept the concept of "whole is greater than parts", to construct an interest community of tourism industrial network, to vigorously promote the integration process of the common interests of tourism industrial network, to form and strengthen the cohesion and competitiveness of interest community of tourism industrial network.

(3) Information coupling at different layers of tourism industrial network. The rapid development of information technology has a dramatic impact on the organization mode and life style of the whole society. Supply and demand information is the premise of effective production and service among members of tourism industrial network, which include information needs of tourists, production information of industries on related industry chain (including its radiation industries), market information, technical information, legal information, personnel information, and information related to other fields. Information coupling is mainly composed of tourism management information system, environmental management geographic information system, and database management information system. Each system generates different data, and forms an orderly flow and contact with higher institute, environmental management sector, news media and other relevant departments through database service layer, application service layer and application expression layer. Departments and agencies can carry out effective management and supervision and offer practical guidance for enterprise production or service in tourism industrial network based on a variety of analytical data and results^[15].

2.3 Realization of the coupling mechanism of tourism industrial network based on circular economy Under circular economy, good coupling operation of tourism industrial network should have the following characteristics. Firstly, behavior of enterprises in tourism industry is reasonable and normative. Secondly, production chain and service chain can deliver smoothly among related industries and within one industry in the tourism industrial network, so that a relatively stable industry chain of circular economy can be formed. Thirdly, realize the harmony and unification of economy, society and environment. To achieve the above goals, a wide range of coupling

strength is still needed.

In the current tourism industrial network in China, there are three basic organizational forms or forces, which are tourist, enterprise and government. They show a relationship of interdependence and mutual restraint, and jointly promote the development of tourism economy. First of all, in a certain sense, tourist is the producer of tourism products and the final consumer and the service object. Therefore, tourists' demand for tourism products, as well as the cognitive level of their own, will feed back to people offering tourism service through market, and further affect the production and service of each node enterprise. Besides, supervision function of public opinions of tourists can be realized by a perfect government supervision system, in order to overcome the loopholes of government supervision, and to effectively supervise enterprises. Secondly, government decision and industrial policy directly affect the development of circular economy and industrial network. In addition, environmental externality and other issues of market failure also require government intervention. Thirdly, enterprise is the cell of industry, as well as the main force of circular economy. Production mode of circular economy can not be realized without the participation of enterprises^[16].

In a word, formation and development of industry based on circular economy are promoted by the three forces together. Therefore, mechanism construction should be conducted based on the interaction and mutual support of the three forces.

3 Conclusion

Due to the external diseconomy of circular economy, emergency of coupling system of tourism industry, a new industrial organization mode, becomes inevitable. We only preliminarily discuss the coupling of tourism industrial network based on circular economy due to some restrictions. And further discussion and research on specific coupling mode and content, and stability of tourism industrial network are still needed.

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基于循环经济的旅游产业网络耦合机制研究

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摘要 简述了国内外旅游循环经济的研究概况和旅游产业网络的研究现状,介绍了旅游产业网络的概念,分析了其主要特征:①旅游吸引物拥有者(景区)与游客是旅游产业网络的核心;②旅游产业网络中的企业虽拥有其独特的资源,但也要依赖其他资源,即具有共生性;③旅游产业网络是旅游产业链的更高形式;④旅游产业网络空间跨度较大,基本不受区域限制;⑤旅游产业网络输出的主要是服务,而不是有形产品,且旅游者成为了网络中的结点单元。在厘清旅游产业网络耦合内涵的基础上,研究了循环经济下旅游产业网络的3种耦合模式:①旅游产业网络内部各结点企业与其纵向相关产业之间进行的物质耦合;②旅游产业网络各结点企业之间的横向服务耦合;③旅游产业网络不同层面之间的信息耦合。探讨了循环经济下旅游产业网络耦合机制的实现,旅游产业网络耦合运行良好应表现出3个特征:一是旅游行业内的企业行为合理、规范;二是旅游产业网络中关联产业之间、产业内部生产链和服务链顺利递接,形成相对稳定的循环经济产业链;三是实现经济、社会、环境的协调统一。旅游者、企业、政府是旅游产业网络的基本组织形态,三者相互作用,共同推动旅游经济的发展。

关键词 循环经济;旅游产业网络;耦合机制