

Research on mechanism of multi-subject participation in co-creation of island ecological value under digital governance

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Abstract: The research on how to participate in the co-creation of island ecological value under digital governance is not only conducive to the promotion of island digital governance, but also conducive to the construction of ecological civilization. This paper analyzes the content of multi-subject participating in the co-creation of island ecological value from the perspective of green ecological development, and from the perspective of establishment of system and digital governance technology platform, the basic points of value co-creation are put forward to promote joint production from the perspective of establishment of digital platform and system optimization.

1. Introduction

Due to their limited land area, unique geographical environment, and fragile ecosystems[1], it is imperative to integrate ecological environmental protection into island development efforts. Public participation in environmental governance has been proven to significantly enhance environmental performance[2]. The understanding and recognition of local resources and culture by island residents will positively contribute to the enhancement of ecological value on these islands. Their active involvement can effectively improve the effectiveness of ecological governance measures. Nevertheless, under traditional governance structures, residents often lack awareness regarding their roles as governing subjects and exhibit insufficient intrinsic motivation for participation; Consequently impeding social engagement levels which ultimately affects the efficacy of ecological governance policies[3]. Effective digital governance of an island's ecological environment can provide robust support for its modernization while ensuring harmonious coexistence between humans and nature. Furthermore, it facilitates the transformation towards collaborative governance involving government bodies, enterprises, social organizations, and island residents. Currently at an early stage, digital governance requires further research to enhance its effectiveness. Investigating how to engage in co-creating ecological value on islands under digital governance not only promotes effective island management but also contributes to the development of ecological civilization.

2. Literature review

It is equally crucial not to overlook investigations into collaborative eco-governance practices with

a particular emphasis on active involvement by local residents. Value co-creation has garnered significant scholarly attention since the 1990s. With the proliferation of social networks, an increasing number of enterprises are engaging in direct interactions with consumers through social media to foster value co-creation. Consequently, investigating value co-creation from a consumer perspective has emerged as a crucial direction for marketing research[4]. As scholars delve deeper into the theory of value co-creation, they have applied it to explore various domains such as tourism, innovative entrepreneurship[5], and social media [6]. From an ecological standpoint, ecological value encompasses both the existence and services provided by ecosystems, emphasizing their long-term sustainability in terms of functionality [7]. In a broader sense, ecological value encompasses environmental, economic, and social values within its overall framework [8]. This study adopts a comprehensive understanding of ecological value. The realization, maintenance, and enhancement of ecological value constitute a dynamic process influenced by multiple stakeholders. However, there is limited research on this process and the relevant stakeholders involved; moreover, existing studies primarily focus on ecotourism. There are few relevant studies exploring multi-subject participation on islands under digital governance. It is urgent to deeply study the ecological value creation of islands.

3. Participants in the co-creation of island ecological value

3.1 Government department

The government management department plays a core role in promoting the co-creation of island ecological value. The main roles of the government include the following aspects: First, to promote the improvement of the system of co-creation of ecological value; The second is the organization, supervision and assessment; The third is to establish projects related to ecological construction, and promote universities and scientific research institutions to participate in the ecological construction of islands; The fourth is to establish an ecological digital governance platform, through the creation of a digital governance platform.

3.2 Universities and research institutes

Universities and scientific research institutions play a vital role in creating the ecological value of islands. First, they provide scientific basis and technical support for the protection and sustainable use of island ecosystems by conducting basic and applied research. Secondly, through education and training, universities and scientific research institutions have cultivated a large number of talents with ecological protection awareness and professional skills, and these talents have become the backbone of promoting ecological protection and sustainable development of islands. Finally, they also actively participate in policy formulation and public education, through research reports, public lectures and media publicity, improve the social awareness of the ecological value of islands and protection awareness, and promote all sectors of society to participate in the ecological protection of islands.

3.3 Enterprise organization

Enterprise organization plays a key role in the co-creation of island ecological value. First of all, enterprises directly participate in the ecological protection and environmental governance of the island by investing in environmental protection projects and technology research and development. Secondly, through environmental protection education and public participation activities, enterprises can improve the social awareness of the ecological value of the islands, promote public participation in the ecological protection of the islands, and form a climate governance system with positive

interaction between the government, enterprises and the public. At the same time, enterprises also participate in the construction of the circulation system of ecological products on the island, through the construction of the circulation system of ecological products, expand the market channels of ecological products, improve the added value of ecological products, and promote the sustainable utilization of ecological resources on the island.

3.4 Public

Public are included island residents and tourists. They have a unique position and role in the co-creation of island ecological value. Island residents are the shapers and beneficiaries of the island's ecological environment, and they play the following roles in the co-creation of ecological value: First, the daily life and production activities of island residents are closely connected with the island ecosystem, and the ecological protection knowledge accumulated during this process is crucial to maintaining the island's biodiversity and ecological balance. Secondly, island residents can participate in the co-creation of island ecology by participating in economic activities such as island ecological governance, island tourism and characteristic agriculture, so as to promote the win-win situation between economic development and environmental sustainable development. Thirdly, island residents can participate in the formulation of ecological protection policies and put forward suggestions and opinions on island protection policies.

4. The process and mechanism of multi-subject participating in the co-creation of island ecological value under digital governance

4.1 Establishment and consensus of island ecological value

4.1.1 The dilemma of value conflict hinders value co-creation

The conflict between the pursuit of interests of island enterprises and the protection of ecological environment. In order to pursue higher economic interests, some island enterprises may ignore environmental protection laws and regulations and carry out illegal discharge and construction, which will directly damage the ecological environment of the island. In addition, some enterprises may sacrifice long-term sustainable development for short-term economic benefits and reduce environmental protection investment, which may cause serious damage to the island ecological environment. Island residents and tourists have little ecological awareness. Due to the lack of ecological awareness, some residents unconsciously produce behaviors that endanger the ecological environment in daily life, such as throwing plastic garbage into the sea. Meanwhile, some residents overexploit natural resources due to livelihood pressure, such as overfishing, resulting in ecological damage.

4.1.2 Establishment of ecological value content of island

The contents of the co-creation of the ecological value of islands mainly include the following three aspects: First, multi-subjects participate in the ecological protection and restoration of islands, government departments designate protected areas on islands to maintain the ecological balance of islands, universities and scientific research institutions study the methods of ecological protection and restoration of islands and assist in the ecological maintenance of islands, and island residents and tourists supervise the ecological protection and restoration of islands and consciously adopt environmentally friendly behaviors; Second, multi-subjects participate in the value creation of island ecological products. Government departments plan the production of island ecological products, universities and scientific research institutions calculate the value of island ecological products and

explore the path to realize the value of island ecological products, production enterprises and island residents adopt green production methods to promote the value creation of island ecological products, and island tourists purchase island ecological products to promote the value transformation. Third, multi-subject participation in the green development of the island. Government departments explore a green and collaborative road to the ecological development of the island, universities and scientific research institutions help the green development of the island by studying the rational industrial system and circular economy ideas on the island, and island residents and tourists participate in the construction of the green development of the island and provide constructive suggestions. Enterprises promote the creation of ecological value of islands through green development and circular economy.

4.2 Island ecological value co-production

4.2.1 Establish an ecological digital governance platform

In order to allow multiple subjects to participate in the co-creation of ecological value on the island, the island government departments need to establish an ecological digital governance platform, which mainly has the following functions: First, digital integration and sharing, the establishment of a unified ecological environmental data platform, integration of ecological data from different departments and regions, to achieve data interconnection, island enterprises and organizations need to share relevant ecological data. Second, intelligent monitoring function, universities and scientific research institutions personnel can use big data, artificial intelligence, Internet of Things and other technologies for real-time monitoring, collection of soil, ocean, air and other environmental data, sharing to the digital governance platform, to achieve sharing. Third, public participation channels, open ecological and environmental data to the public through digital platforms, enhance transparency, and encourage public participation in environmental protection and governance. Government department can establish a feedback mechanism, so that the public can report and make suggestions on ecological and environmental problems which will form a good interactive relationship.

4.2.2 Establish an ecological co-creation system with clear rights and responsibilities

Multi-subject participation in the co-creation of the ecological value of the island needs to clarify the rights and responsibilities of each subject, in order to build a good value co-creation behavior. First of all, government departments need to clarify the goal and value proposition of ecological value co-creation, and conduct ecological value education and training through digital governance platforms to clarify the common value proposition to multiple subjects. Second, government departments should take the lead in clarifying the roles and responsibilities of each entity to ensure that each entity understands its place in the ecosystem and its responsibilities. Finally, the responsibility of the enterprise organization should be clarified through the form of policies and regulations to regulate its enterprise behavior.

4.2.3 Establish a participatory system in which interests coexist

Some contents of co-creation of ecological value cannot be restricted by laws and regulations, such as low-carbon travel and plastic reduction behavior, etc. Therefore, a reciprocal and mutual trust participation system is needed to encourage multi-entities to participate in co-creation of ecological value, which mainly includes: First, mutual trust between government and enterprise on the island. By building a unified digital governance platform, the government and enterprise on the island can form equal communication and dialogue, improve information asymmetry, and promote mutual trust between government and enterprise. Second, islanders and tourists participate. The ecological digital governance platform can set up the function of "taking photos" to report ecological pollution or

ecological destruction behaviors in the island, and set up a point reward system. Third, participation of universities and scientific research institutions. Government department can set up scientific research projects guided by the needs of island ecological management and provide financial support to universities and research institutes. So universities and research institutes can explore the value of island ecological products and ecological protection related research, so as to help the island ecological value co-creation.

4.3 Island ecological value co-creation model spread

The diffusion of the mode of co-creation of island ecological value is a complex process. It involves many aspects, including: firstly, copying the technical experience of different island ecological digital governance systems. Secondly, referring to the experience mode of existing islands, other islands can quickly copying the model to promoting the co-creation of island ecological value and promoting the development of green islands; Thirdly, island government should carry out institutional innovation, and promote the spread of the mode of co-creation of island ecological value.

All in all, the process and mechanism of multi-subject participation in the co-creation of island ecological value under digital governance are shown in Figure 1:



Figure 1: Co-creation mechanism of island ecological value

5. Conclusion

Based on the theory of general value co-creation, this paper expands the model of ecological value co-creation, and from the perspective of green ecological development of islands, summarizes the roles and functions of the government, enterprise organizations, island tourists, island residents, universities and scientific research institutions in the co-creation of island ecological value. This paper points out that its co-creation includes three parts: ecological protection and restoration, ecological product value creation and ecological green development. In addition, from the perspective of establishment of system and digital governance technology platform, the basic points of value co-creation are put forward to promote joint production from the perspective of establishment of digital platform and system optimization.

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