



Design of Marine Fishery Service System Based on Sustainable Concept

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ABSTRACT. Marine fishery is a national strategic industry. China's marine fishery started in 1985 and has become one of the major marine fishery countries in the world after more than 30 years of development. The research explore the design method of marine fishery service system under the sustainable concept, and analyze the value of marine fishery service design under the sustainable concept according to the connotation of the sustainable concept and the development status of my country's marine fishery. Analyze the current situation of marine fishery in Laizhou City, Shandong Province, build a service system map and service blueprint, and present the design scheme with APP and other design content. Introducing the concept of sustainability into marine fisheries can provide new ideas and methods for the innovative design of China's marine fisheries service system, promote the development of rural agricultural economy, help solve the "three rural" issues, and promote the implementation of rural revitalization strategies.

Keywords: Sustainable concept; Marine fishery; Service design; User experience; Rural revitalization

1 Introduction

Marine fishery refers to the production undertakings engaged in marine fishing and mariculture. Marine fishing is a gathering industry. my country has a long coastline, a large continental shelf, warm and cold currents along the coast, and many harbors, all of which are favorable conditions for the development of marine fisheries. Actively developing marine fisheries can provide a large amount of animal protein for the people and provide important commodities for foreign trade, which is conducive to alleviating the contradiction between a large population and a small land in our country, and is of great significance to the development of the national economy. In recent years, the production scale of my country's marine fishery has been significantly expanded, the product structure has been increasingly optimized, and the production method has been steadily upgraded, which has greatly met the people's growing material needs. At present, the output of marine fishery has increased significantly. There are many problems in the influence of fresh keeping technology and so on. As a de-

sign activity of planning and organizing business resources, service design is an effective means to help marine fisheries optimize the industrial structure, enhance user stickiness, and strengthen brand culture. On the whole, the marine fishery service design in my country is not mature enough at this stage, and continuous innovation is needed to enrich and improve its service process and content. The theory of sustainable development refers to the development that not only meets the needs of contemporary people, but also does not endanger the ability of future generations to meet their needs. It takes fairness, continuity and commonality as the three basic principles. The ultimate goal of sustainable development theory is to achieve common, coordinated, fair, efficient and multi-dimensional development. The concept of sustainable development is the core content of the scientific outlook on development. Sustainable development refers to the development that meets the needs of the present without compromising the ability of future generations to meet the needs. Introducing the concept of sustainability into the field of marine fishery service design with a clear purpose can improve user experience, improve service process, and enrich cultural connotation from the perspective of emotion and service process, and provide theoretical support for the transformation and development of my country's marine fishery service design. The purpose of this study is to analyze the value of marine fishery service design under the sustainable concept by exploring the design method of the marine fishery service system under the sustainable concept, according to the connotation of the sustainable concept and the development status of my country's marine fishery.

2 Current status and problems of marine fishery

2.1 Status of marine fisheries

As the world's most populous country, my country's per capita arable land area is less than one-third of the world's average level, and the contradiction between more people and less land is prominent[1]. Since the reform and opening up, with the rapid economic and social development and the gradual increase of the total population, the per capita cultivated land area in my country has further declined. In addition, my country's per capita water resources and per capita grasslands are relatively small, and the protein needed by 1.4 billion people is overly dependent on land resources, which further aggravates the shortage of water resources, and causes the destruction of grasslands and over-exploitation of soil. Since the 1980s, my country's offshore fishery resources have declined rapidly, and the traditional "three major fishing grounds" have disappeared one after another. Coupled with serious marine environmental pollution, the pressure on marine ecological protection is increasing day by day, and the protection tasks are increasingly heavy[2]. It is difficult to rely solely on land resources. To meet the growing demand of our people for food, especially high-quality protein. The study found that in 2021, China's marine fishery industry will realize an added value of 529.7 billion yuan for the whole year, an increase of 4.5% over the previous year. The marine fishery continues to transform and upgrade, the breeding and fishing structure has been further optimized, the ability to protect and utilize

germplasm resources has continued to increase, and the development of green, intelligent and deep-sea aquaculture has accelerated.

2.2 Problems with marine fisheries

At present, the total production volume of my country's marine fishery has achieved a substantial increase in the development process. However, how to improve the relevant service system and industrial planning, convert production into economic benefits, and achieve the goal of a strong agricultural country has become the next challenge for the development of marine fishery[3]. main challenge. The following problems exist in the process of upgrading the value of marine fisheries:

1) It is difficult to expand the consumer market. The vast majority of China's ocean-going companies focus on the international market for product sales, and have neglected the development of the domestic consumer market for a long time. Affected by the global economy and the sluggish consumption in domestic and foreign markets, it is difficult to make a breakthrough in the sales of marine products, resulting in a decline in the efficiency of ocean-going production and an overall decline in the efficiency of the industrial chain. At the same time, marine enterprises do not have a strong awareness of complying with international fishery management regulations, the self-discipline of enterprises and fishing vessels operating at sea is not high, and the corresponding supervision and management mechanisms are lacking. In addition, consumers have insufficient awareness of the safety and nutrition of marine products, the characteristics and awareness of Sino-Ocean brand are low, the variety of marine products is simple, the packaging is simple, the processing is cumbersome, the market sales channels are weak, there are not many marketing outlets, cold chain logistics There are relatively few enterprises, and the product market share is not high. Although some enterprises are trying to operate transnationally, due to the small scale of enterprises and the influence of many factors such as capital, technology, information, talents, customers, etc., the development ability is not strong

2) Lack of industrialization service strategy. At the present stage in our country, the relationship between marine farmers and enterprises is loose, and a standardized and perfect service system has not yet been formed. Enterprises lack guidance on product planning, organization and promotion. improve.

3) Lack of brand and cultural awareness. At this stage, the degree of integration and collectivization of marine fishery is not high. After years of development, the relevant leading enterprises have formed a certain production scale, but in the face of increasingly competitive domestic and foreign markets, they still lack a clear understanding of culture. Brand positioning and brand value construction[4].

3 Significance of sustainable concept involved in marine fishery service design

3.1 Connotation of sustainable concept

The embryonic form of the concept of sustainability is that early European philosophers believed that human beings need to make certain sacrifices to make life more secure and balanced[5]. In 1962, Rachel Carson put forward the term "sustainable development" for the first time in "Silent Spring"[6]. On this basis, the World Commission on Environment and Development proposed in 1987 that sustainable development should not only meet the needs of contemporary people needs, and not endanger the development of future generations to meet their needs[7]. By the 1990s, the concepts of ecological design and green design were gradually proposed. In 2007, "Green Design: From Cradle to Cradle" pointed out that sustainable development is The only way for social development[8]. The essence of the concept of sustainable development is to properly handle the relationship between man and nature, and ultimately realize the recycling of resources. People's excessive consumption of resources and the rapid deterioration of the environment have intensified the conflict between man and nature, so all walks of life have introduced the concept of sustainable development.

3.2 Value analysis of marine fishery under sustainable concept

The marine fishery under the sustainable concept can provide more ways for the sales of my country's marine fishery and reduce the waste of seafood, thereby bringing more income to fishermen and providing more choices for surrounding users, which will help Based on the establishment of customer loyalty, improving brand credibility and brand value can improve customer participation and satisfaction, enrich the sales model of

Livestock and fish products, increase customer groups, disperse sales risks, expand the consumer market, and ultimately accelerate This has promoted the overall development of the rural economy, guaranteed the quantity and quality of food production, and changed the traditional fishery sales method[1]. This not only increased the income of local fishermen, but also attracted more young people to return to their hometowns for employment. In addition, it can also attract users to participate in and experience the lifestyle of fishing villages, satisfy their curiosity and desire to explore marine fishery culture, cultivate the pride of fishermen, and benefit the inheritance and development of local culture and the development of local tourism.

4 Laizhou marine fishery service design practice based on sustainable concept

4.1 Development background and status

Laizhou City, Shandong Province has a coastline of 108 kilometers and a sea area of 1,690 square kilometers. It is the hometown of bay scallops in China, the largest pollution-free breeding base of turbot in the country, and the main production area of high-quality aquatic products such as sea cucumbers. In 2021, the total output of aquatic products in Laizhou will be 270,000 tons, including 60,000 tons of fishing and 210,000 tons of mariculture. Mariculture has become the main source of aquatic products in Laizhou. Aquaculture products are mainly scallops, sea cucumbers, turbot, clams, swimming crabs and other species. The main farming modes are raft farming, bottom sowing farming, industrial farming and pond farming[9]. Among them, Mingbo and blue sea farming are relatively large-scale and basically formed. It has established a complete industrial chain from seed breeding, sea breeding, processing and sales, and most of the rest of the enterprises are single seed production or sea farming. The research team visited and investigated Laizhou City and found that Xinye County has achieved substantial growth in marine fishery production through the introduction of large-scale high-end leading enterprises at this stage. However, there are still some problems in the process of marine fishery sales and development. It needs to be improved, and the sales model of aquatic products needs to be expanded to increase customer groups, diversify sales risks, and expand the consumer market.

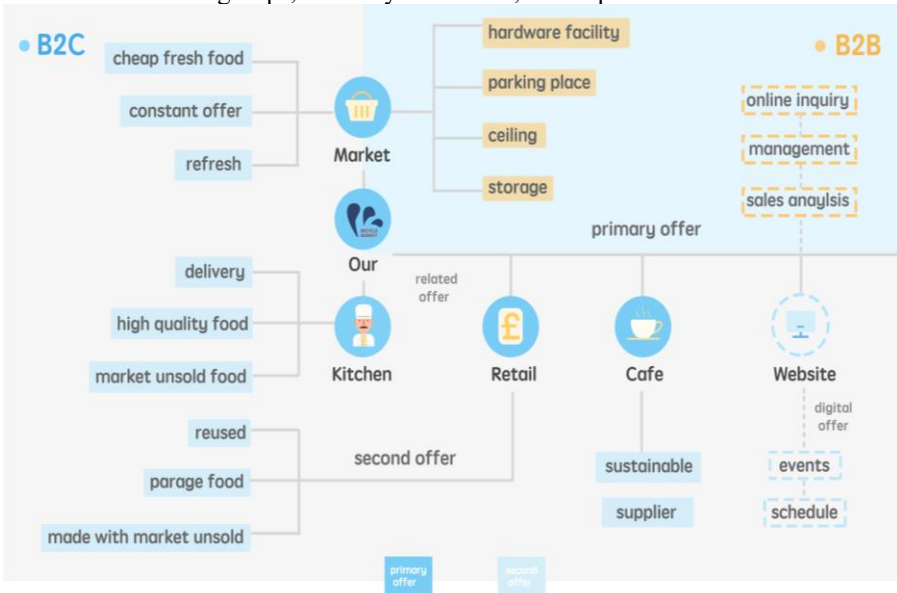


Fig. 1. Marine fishery service system map

4.2 Service system design

4.2.1. Service system diagram.

The visualization method can clearly show the service, information, capital exchange and conversion relationship between stakeholders in the system[10]. The designer can use the service system diagram, a scenario analysis tool, to form a specific design orientation in the process from conceptual conception to service construction. Marine fishery service system map, Figure 1. In the organization and operation of the marine fishery service system in Laizhou, the customer group is the center, and the marine market and related APPs are used as carriers to promote the sustainable development and sales of marine products and bring customers a better user experience.

4.2.2. stakeholder map.

The stakeholder map is a business analysis tool designed to clarify roles and relationships. It is used to discover individuals or organizations that have a stake in the project, and classify these individuals and organizations according to their relevance to the project, their influence on the project, and their importance[11]. By analyzing the interaction and relationship between various organizations and individuals, find out one or more main research objects that are most important to the project. In the fishery stakeholder map of Laizhou City, the stakeholders included are the fishery market, backstage staff, waiters in the market restaurant, cooks, managers, courier companies, fishery fishermen, system managers, cultural coordinators, cleaning personnel, customers, etc.

4.2.3. Presentation of Design Scheme.

According to the design needs of marine fishery services in Laizhou City, the Laizhou Ocean Fishery APP and fishery market are designed. The Laizhou Fishery APP is named "Laizhou Fishery", which is conducive to the promotion of local culture and later brand communication. Its core functions include online purchase, market online service and my three functional modules. Online purchase includes five parts: mall, shopping cart, collection, VR fishing ground visit, and scanning code to track products; the online service of the market includes two parts: restaurant ordering.

In order to meet the needs of customers for convenient purchases around the community, the fishery market consists of four parts: an ocean-themed restaurant, a seafood and processed product sales area, a cultural communication and handicraft sales area, and a leisure area. The four parts implement regional isolation through the access aisle, and the two sides of the access aisle are the sales area for seafood and its processed products. The ocean-themed restaurant is at the innermost part of the entire market, which does not affect the crowd who come to buy, and is convenient for customers to buy. The design of the restaurant menu is shown in Figure 2. The menu uses blue and orange as the main color, which will arouse the appetite of customers and convey the feeling of happiness and friendliness[12].

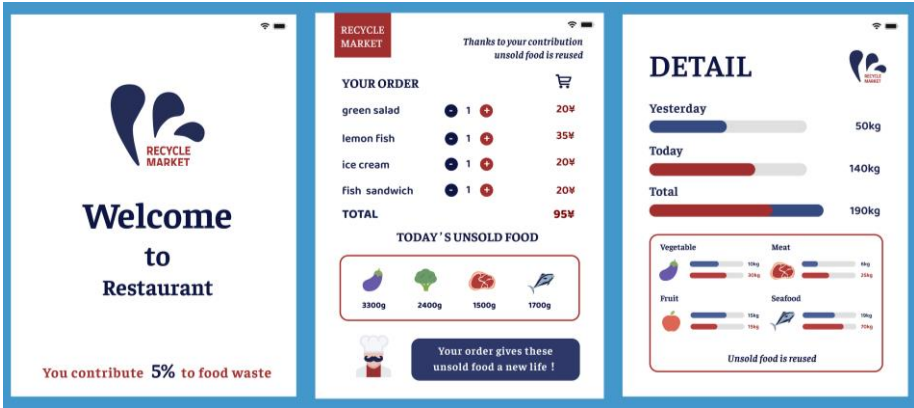


Fig. 2. The design of the restaurant menu



Fig. 3. The spatial layout

In order to achieve food sustainability, the seafood ingredients used in the restaurant come from the sales area of seafood and its processed products, which will increase market revenue and enrich customers' shopping choices. This design is conducive to users' immersive consumption and experience according to their own needs, and will not interfere with different needs. The spatial layout and market details are shown in Figure 3.

5 Design evaluation

Before the experiment started, the users were divided into 2 groups with 40 people in each group. Group 1 is users who do not use the ocean fishery market, and group 2 is users who use the ocean fishery market. During the experiment, two groups of users were required to participate in the online questionnaire survey immediately after completing the service experience, and five evaluation criteria were drawn up: comfortable shopping experience, sustainable experience, physical and mental pleasure,

willingness to buy a lot of goods, and willingness to buy again Participate in the service". The 5-point questionnaire survey and evaluation form is adopted. The more satisfied the user is with this dimension, the higher the score. After the experiment, the scores of the user satisfaction questionnaire were counted. The statistical results are shown in Table 1. The statistical results show that, the average scores of group 2 are higher than those of group 1, and the significant p-values are all less than 0.01, indicating a significant difference. It can be seen that participating in the marine fishery market can effectively enhance the user's sense of participation and experience, and make users feel Inner joy and willingness to experience service again. Therefore, the above design practices have verified that integrating sustainable concepts into marine fishery service design is an important factor to improve user experience and promote the sales of Hayang fishery products.

6 Conclusion

The involvement of sustainable theory in marine fishery service design plays a positive role in enriching service design research, promoting marine fishery to enhance user experience, building industrialized service strategies, enriching sales models, and strengthening brand culture. Certain theoretical and practical value. Combined with the practical process, it provides a reference for the subsequent design of sustainable marine fishery services in other regions. In future research, more consideration can be given to the research significance and value of design intervention in agriculture, and the problem-solving and creative abilities of design thinking can be used to contribute to the development of my country's agricultural power

Table 1. Comparison table of controlled experiments

evaluation standard	group1	group 2	Independent Sam- ples t Test	
	Mean±S.D.	Mean±S.D.	T	Sig
comfortable shopping experi- ence	4.38±0.628	1.80±0.608	3.220	0.000**
sustainable experience	4.30±0.608	1.60±0.545	3.258	0.000**
physical and mental pleasure	4.38±0.628	1.87±0.607	4.106	0.000**
willingness to buy a lot	4.30±0.608	1.85±0.662	5.196	0.000**

** : There is a difference at the significance level of 0.01

AUTHORS CONTRIBUTIONS

Chaowei Wang, Zheng Wang performed the preliminary survey data collection and partial literature collection and analysis; Lanyu Liu performed the image processing, data analysis, idea conception and paper writing.

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In addition, the interview results showed that the reasonable service design, users can clearly feel the role of sustainable services in the entire service process, and are very willing to participate in it and contribute to environmental protection. Therefore, this design solution effectively solves the main problems existing in the current marine fishery, and greatly improves the user experience.

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