

Research on Talent Training System of Marine Cultural Industry Based on Collaborative Innovation of Governments, Enterprises, Colleges, Scientific Institutions and Users

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Abstract This paper focuses on the coupling between talent training system of marine cultural industry and collaborative innovation of governments, enterprises, colleges, scientific institutions and users. Firstly, the significance of talent training in marine cultural industry for the construction of China as a maritime power was analyzed. Secondly, the current situation of talent training in China's marine cultural industry and the existing problems were analyzed. Finally, how to integrate the collaborative innovation of governments, enterprises, colleges, scientific institutions and users into the talent training system of marine cultural industry was explored to help talent training to break through the bottleneck and promote the vigorous development of marine cultural industry.

Key words Governments, enterprises, colleges, scientific institutions and users; Collaborative innovation; Marine cultural industry; Talent training; Talent training system

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As the "the Belt and Road" initiative and maritime power strategy have been proposed, China's marine cultural industry is facing unprecedented development opportunities. The primary task of vigorously developing marine cultural industry is to train marine cultural talents. However, China has not yet formed a perfect talent cultivation system for marine cultural industry, which leads to the shortage of talents in marine cultural industry and limits the development of China's marine cultural industry. How to build a talent training system suitable for the development of China's marine cultural industry is an urgent problem to be solved.

1 Significance of research on talent training in marine cultural industry

1.1 A manpower guarantee for building a maritime power

Building a maritime power is an important part of the country's overall development strategy, and it is the choice of development goals and directions of China's future marine industry^[1]. As a new industry, marine cultural industry has a strong development space, and the status of marine culture in marine industry is gradually improved. Developing marine cultural industry has become an important part of construction of China's maritime power strategy. The development of industry is inseparable from the support of talents. The general

lack of talents in China's marine cultural industry is an important bottleneck restricting the development of China's marine cultural industry. Therefore, cultivating talents for marine cultural industry and strengthening marine education have become one of the important tasks of China to become a maritime power^[2].

1.2 New impetus for the development of marine economy

In May 2015, China published the *Blue Book of Marine Culture Industry in Guangdong, Guangxi and Hainan (2010–2013)*, which is a epoch-making marine culture industry book. In the *Outline of Innovation Development of Service Industry (2017–2025)* issued in 2017, it is pointed out that marine culture industry should be developed actively, which provides a major opportunity for the breakthrough development of China's marine cultural industry. In the 13th Five-Year Plan for National Marine Economic Development, it is proposed that it is necessary to expand and upgrade marine service industry and develop marine cultural industry. It can be seen that marine cultural industry has been highly concerned by the Chinese government. In recent years, China's marine cultural industry has developed rapidly. In 2017, the total output value of marine industry in China reached 7 761.1 billion yuan, of which the added value of the tertiary industry was 4 391.9 billion yuan, accounting for 56.6% of the total value of marine production, and the number of people involved in marine industry was 36.57 million^[3]. The role of marine cultural industry in the development of marine economy is increasing. The development of marine cultural industry is an important way to achieve the transformation, upgrading and characteristic development of China's marine economy.

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1.3 An Important breakthrough In the development of marine education China's marine education has developed rapidly and achieved remarkable results, providing a large number of talents for China's marine construction. In 2016, the number of employed people in the water transportation industry in China has reached 460 259. In 2017, the number of people employed in marine industry was 36.57 million. However, this is still far from the speed of China's marine economic development. At present, China's marine education undertakings, especially the talent training system of marine cultural industry is still not perfect. In the construction of marine talent training system, the main structure of education, the professional structure of disciplines and the structure of talent quality are three key structural levels^[4]. However, the main structure of China's marine culture industry is relatively simple, and the level of talent quality structure is vague. The talent education of marine cultural industry in China is a short board for the development of China's marine education. Solving this problem will help China's marine education industry to break through the bottleneck and provide more comprehensive talent support for marine economy.

2 Current situation of talent training in marine cultural industry

2.1 Current situation of talent training in sea-related colleges At present, there are 15 colleges and universities offering maritime majors in China, such as Shanghai Maritime University, Dalian Maritime University and Jimei University. In addition, there are more than 80 maritime professional training institutions. There is a great disconnect between the theory and practice of marine education. For marine cultural industry, the role of marine education in China has not been fully applied in practice. Most practitioners in marine cultural industry have not received systematic marine cultural education, which is not conducive to the professionalization and characteristic development of marine cultural industry.

2.2 Subjects of talent training The sea-related disciplines of an educational institution as the subject of marine talent training are often shaped and grows in the gestation of its own resource structure^[5]. For the overall layout lacking the collaborative innovation of governments, enterprises, colleges, scientific institutions and users, it is difficult to avoid the looseness and inconsistency of structure among various subjects of talent training. Subjects of China's marine talent training are extensive, including governments, marine schools, marine research institutes, marine enterprises, etc. However, the subjects of talent training in China's marine cultural industry is relatively simple. At present, only a few colleges and universities carry out cultural management majors, and there is almost no talent training for marine cultural industry. The openness of transnational cooperation in marine cultural industry, the high-end nature of cultural and technological integration, and the hydrophilicity derived from the ocean determine the professional needs of its talent training^[6]. The talents of China's marine cultural industry are basically the relevant talents of non-navigation majors in colleges and universities. Although these talents have

the skills of this profession, they have insufficient understanding of characteristics of marine cultural industry and lack corresponding comprehensive practical ability.

2.3 Speciality structure According to the professional division of the Ministry of Education, there are only 10 kinds of marine-related majors in China, such as aquaculture technology, navigation technology, maritime management, and marine engineering technology, and technical talents are mainly trained. The key factor limiting the cultivation of talents in China's marine cultural industry is the lack of a perfect, systematic, and interdisciplinary talent training system for China's marine cultural education. For example, the cultivation of talents in marine cultural industry lacks an organic curriculum system, teacher strength, and a security system^[7]. The training of talents in marine cultural industry is mainly the cultivation of innovative thinking, professional skills and comprehensive ability. However, the main function of cultivation of marine talents in China is to provide professional and technical talents for navigation in China. The trained talents are mainly high-skilled talents. A few talents have been trained in cultural industry that requires literary accumulation, while the unique semi-militarization training system of marine talents conflicts with the cultivation of innovative thinking, which leads to the complexity of talent training in marine cultural industry in China in terms of system and concept.

2.4 Quality structure of talents The quality of talents in marine cultural industry can be divided into general quality and special quality^[8]. The attributes, operation and working environment characteristics of marine cultural industry all determine the particularity of quality structure of talents in marine cultural industry and its elements. According to China's maritime power strategy and the current situation of marine economic development, the general quality of talents in marine cultural industry include marine awareness, dedication and comprehensive competence of marine cultural industry. The special quality includes sea-related compound knowledge and skills and the international vision of six categories of talents in marine cultural industry. The cultivation of talents in China's marine cultural industry is still in its infancy, and it is still exploring the establishment of a talent quality system for marine cultural industry.

3 Problems of talent training in marine cultural industry

3.1 Dispersion of subjects of talent training The current subjects of talent training in China's marine cultural industry mainly include marine colleges, training institutions, sea-related enterprises, governments, etc. However, there is no interaction and exchange between these subjects in talent training, and the neglect of talent training in marine cultural industry by marine colleges as the subjects of talent training is an important reason for the dispersion of subjects of talent training. Due to the lack of systematic training system in colleges and universities, enterprises can only choose talents from culture-related industries. Colleges and universities cultivate talents according to the traditional talent training mode, resulting in an imbalance

in the supply and demand of talents. The government's lack of overall leadership for marine cultural industry is also a major reason why the subjects of talent training cannot be consolidated. So far, no corresponding laws and regulations of marine education and marine economy has been issued to guide its development, so that the emphasis of schools on the talent training of marine cultural industry cannot be improved.

3.2 Lack of marine cultural subjects There is obviously a considerable gap between the professional setting of talent training in marine cultural industry and the strategic layout and development focus of China's marine cultural industry. The total number of subject majors is obviously insufficient. The sub-categories involved in China's marine cultural industry are relatively extensive, and it does not involve the fields of culture and art and economic management. However, there is no relevant major in the discipline setting of marine talent training in China. The professional setting of China's sea-related colleges has the problem of attaching importance to natural science and ignoring the humanities. The talent training of marine sociology and marine administrative management is still in its infancy, and such talents are the basis for the development of marine cultural industry. The core professionals for the development of marine culture industry are still lacking. Some sea-related colleges have not established an independent marine culture discipline system.

3.3 Lack of compound talent reserves Marine cultural industry is a comprehensive and complex system that covers comprehensive management activities of marine resources, ecological environment, economy, culture, and news. This determines that talents in marine cultural industry must possess comprehensive quality and ability. The development of marine cultural industry requires a large number of compound talents who have mastered marine professional knowledge and learn about economics, management, journalism and culture. The talents of China's marine industry mainly include ordinary laborers, skilled talents and management talents, but the talents of marine cultural industry are scarce. As the current talent education of China's marine cultural industry is in its infancy, marine education only focuses on the cultivation of professional talents and neglects the reserve of general talents, resulting in a small number of compound talents with basic qualities and professional qualities. The employees of China's marine cultural industry are mainly professional talents of other cultural industries. The comprehensive talents who fully understand marine cultural industry and have the expertise and skills of cultural industry have a large gap.

3.4 Unbalanced talent structure The structural imbalance of talents in China's marine industry is mainly reflected in the imbalance between men and women, the distribution of high-, middle- and low-end talents and the lack of young talents. The proportion of males to females in China's marine industry has reached 1:9. In 2015, the number of doctoral students in China was 327 000, while the number of doctoral students in marine majors was only 4 251, accounting for 1.3%, and these talents were mainly concentrated in physical engineering majors such as physical oceanography, marine science, and marine biolo-

gy. Undergraduate majors in marine science have a general enrollment difficulty. By 2020, the total number of demanded marine talents will exceed 3 million. However, the marine professionals who graduated from higher education institutions in China every year can not meet the standard. In order to resolve the contradiction between the supply and demand, marine talent training institutions set up short-term accelerated training courses to train a group of basic talents that can be basically competent in a six-month cycle, but such behavior has aggravated the structural imbalance of shipping talents in China to a certain extent.

3.5 Inadequate guarantee system for talent training system The teaching staff of universities is still incomplete, and there are fewer marine cultural talents with strong professional knowledge and practical ability. As a result, the theoretical and practical education of talent training is lacking to a certain extent. From the perspective of employers, rapidly improving the skill level of marine cultural talents and promoting their mastery of various related skills is one of the important goals of talent training in marine cultural industry. However, due to the lack of good practical training conditions, it is difficult to achieve this goal. Limited by the traditional marine talent education system in China, China's marine education pays more attention to the cultivation of professional and technical talents. For marine cultural industry that needs interdisciplinary integration, due to the lack of collaboration and communication among various professions, and the lack of collaborative innovation concept, the talent training of China's marine cultural industry has not broken through the bottleneck.

4 Coupling of talents training system of marine cultural industry and collaborative innovation of " governments, enterprises, colleges, scientific institutions and users"

4.1 Construction of a multi-agent collaborative innovation training system Collaborative innovation of " governments, enterprises, colleges, scientific institutions and users" is an innovative collaborative education model with the combination of theory and practice, emphasizing the further integration of superior education resources^[8]. Relevant government departments such as the education management department and the oceanic administration mainly provide macro-information support about policies, funds, and related industries. Employers mainly provide the latest talent market needs to help identify talent training goals. Schools should combine the theory and practice of talent training in marine cultural industry. In theory, it is necessary to pay special attention to the accumulation of professional knowledge and literacy of cultural industry, and this is a unique characteristic of cultural industry. In practice, it is necessary to make talents have sufficient practice opportunities to monitor the effectiveness of talent training in real time. The cultivation of talents based on the collaborative innovation of " governments, enterprises, colleges, scientific institutions and users" is conducive to making the talent training of marine

cultural industry more targeted and purposeful. Therefore, the construction of talent training system of marine cultural industry should be guided by national strategies, oriented by market demand, take marine colleges as the subjects, and cooperate with research institutes and training institutions. At the same time, it is needed to establish an information platform of talent training in marine cultural industry for real-time communication, and the five subjects give play to its own resources and information advantages and timely access to relevant information from other subjects to jointly promote talent training.

4.2 Construction of multi-faceted characteristic disciplines in marine cultural industry Due to its interdisciplinary professionalism, it is difficult to set up subject professional structure for talents of marine cultural industry. Firstly, the government should integrate the needs of national strategies and market, establish a clear network of talents in marine cultural industry, and clarify the shortage of different types of talents in marine cultural industry to provide a good source of data for setting up professional structures in schools. Secondly, schools should fully analyze the characteristics of talents in marine cultural industry. Marine cultural industry is mainly divided into six categories, among which culture and economic management are the main ones. It is necessary to fully draw on the more mature talent training systems of the two majors to provide the basis for professional structure. Besides, it is also necessary to carry out corresponding characteristic courses according to the characteristics of marine cultural industry to provide special talents for marine cultural industry. Thirdly, enterprises should provide a practical basis for the talent training of marine cultural industry, especially establish a cooperative practice base between enterprises, colleges and scientific institutions, and provide real-time market demand information for the talent training of colleges to help schools better adapt to changes in market demand.

4.3 Structured cultivation of compound talents In the process of training marine talents, it is necessary to attach great importance to the breadth expansion of talent quality structure. To train composite and innovative talents for marine industry, quality training should be designed systematically from the aspects of knowledge, skills and ability to complete the elements of talent quality and improve the structure. The talent quality of marine cultural industry includes basic quality and professional quality. The basic quality is consists of ideological, cultural, professional, physical and psychological qualities. The professional quality is produced based on the combination between the characteristics of marine industry and professional knowledge of cultural industry. The improvement of quality structure of talents needs to be guided by the government and is realized based on the collaboration of enterprises, colleges, scientific institutions. It needs to be combined with national strategy and market demand to form a multi-structured professional talent quality structure of marine cultural industry. The government needs to strengthen the propaganda and policy support of marine culture, improve their own competitiveness in attracting talents. Meeting the needs of enterprises is an impor-

tant goal of talent training. To ensure the balance of supply and demand of talents, enterprises should provide detailed talent quality needs and timely cooperate with enterprises, colleges, scientific institutions. Schools, as the subjects of training, should integrate the resources of governments, enterprises, scientific institutions and users to build a structured talent training system with collaborative innovation.

4.4 Construction of a talent security system with collaborative innovation The talent training guarantee mechanism of marine cultural industry based on the collaborative innovation of governments, enterprises, colleges, scientific institutions and users needs to include operational mechanism, traction mechanism, incentive mechanism, evaluation mechanism, sharing mechanism, guarantee mechanism and competition mechanism. The seven mechanisms need to be integrated and coordinated comprehensively to form a talent security system. Among them, the operation, traction, incentive, evaluation and competition mechanisms promote talent training and scientific development from the interior of talent training (namely the behavior of marine cultural talents). The sharing mechanism and guarantee mechanism guide talent training from the outside of talent training (namely talent training environment). The sharing mechanism promotes collaborative innovation cooperation among governments, enterprises, colleges, scientific institutions and users, and the guarantee mechanism promotes the standardized operation of talent training from the perspective of laws, regulations and policies. The role of the seven major mechanisms should be given play to based on the collaborative innovation of governments, enterprises, colleges, scientific institutions and users. Taking the evaluation mechanism as an example, the key to perfecting the evaluation system is to establish a set of feasible evaluation indicators, in which governments, enterprises and colleges should participate. According to the national strategic needs and the latest market demand and main characteristics, and based on the feedback of multi-party evaluation results, a multi-directional dynamic evaluation system for timely adjustment of evaluation content is established.

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shipping service management concepts, transform the original low-end service concept, learn from the development experience of China's more mature financial service industry, integrate the industrial chain of shipping service industry, and vigorously build shipping service agglomeration areas to promote the development of high-end shipping service culture.

4.3 Strengthening the construction of shipping culture talents The quantity and quality of shipping talents largely determine the development level of shipping industry. It is necessary to strengthen the construction of shipping talents, improve the quality of maritime education and training, improve the introduction policy of shipping talents, increase the number of high-end shipping talents, urgently needed talents and special talents, increase and expand support. In addition, it is necessary to strengthen the innovation and entrepreneurship education of shipping culture talents. Maritime colleges and training institutions should enhance students' knowledge and expand their thinking to provide high-quality talents for the development of shipping culture.

4.4 Promoting the development of shipping big data culture The supply of shipping big data talents can't meet the demand. For shipping industry, it is more feasible to cultivate talents of big data management in their own technical teams. It is needed to fully integrate big data technology with industry norms and codes of conduct of shipping industry. Besides, it is necessary to cooperate with high-level institutions and scientific research institutions to rapidly improve the cutting-edge technical capability. Meanwhile, it is needed to strengthen the cooperation between enterprises, colleges and scientific institutions and rely on the superior disciplines of universities to jointly cultivate talents. Finally, the transformation of ideological concepts of talents in shipping industry should be promoted.

4.5 Creating a special brand for shipping culture construction China has a long history of shipping and cultural accumulation. The construction of maritime culture must not only inherit the fine tradition of navigation, but also continue to innovate and expand according to different maritime characteristics. Traditional shipping culture should be combined with modern international shipping culture to build a shipping culture system characterized by openness, harmony and science and develop shipping culture with Chinese characteristics. Meanwhile, the construction of China's shipping culture needs to pay attention to the shaping of its own distinctive brand. Through the construction of a comprehensive festival platform, online media platform and professional cultural exchange and academic platform, the core value of its own shipping culture will be finally formed.

4.6 Establishing a shipping culture guarantee system The construction of shipping culture involves a wide range of

subjects, diverse content, and three-dimensional layers. The government should lead shipping-related groups to construct shipping culture under the broad support of the society. The shipping culture guarantee system needs to be reflected from two levels. One is the guarantee of ideas and understanding. Cultural construction is raised to a strategic level, systematically scientifically planned and fully and effectively implemented, and the cultural strategic exchanges between relevant industries, enterprises and cities are organized to improve and deepen understanding of the significance of cultural strategy. The other is the guarantee of organization and mechanism. The construction of shipping culture is a systematic project and needs to be performed with the construction of other shipping soft environment. The short-term, medium-term and long-term action goals and plans are establish to continuously enrich and improve the content and measures of shipping culture construction.

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