

Models and approaches for the integration of the digital economy and the cultural tourism industry

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Abstract: As an ancient country with five thousand years of civilization, China is also one of the countries with the richest cultural heritage resources in the world. These cultural resources carry the unique cultural genes of the China, and at the same time, they also provide important resources and development ideas for the integration of Chinese culture and tourism industry. Along with the progressive integration of culture and tourism industry, the development mode of “promoting tourism with culture and highlighting culture with tourism” has been widely recognized by all walks of life, which has not only enriched the resources, but also promoted the high-quality development of tourism industry, and tourism industry has also provided important assistance to the dissemination of culture. It can be said that the integrated development of culture and tourism is an inevitable trend of the times. The rapid development of the digital economy will set off a wave of transformation in the cultural and tourism industry, and the digital construction and intelligent development of the cultural and tourism industry will also become a new direction.

Keywords: Digital economy; Cultural and tourism industry; Integration of the digital economy and the cultural tourism industry.

1. Research Background

In the 14th Five-Year Plan released in October 2020, China proposed to develop the digital economy, promote the industrialization of digital and digitization of industry, and promote the deep integration of the digital economy and the real economy. At the same time, it is also necessary to promote the deep integration of culture, tourism and other service industries with modern agriculture, and accelerate the digitization of service industries. Smart tourism, guided by intelligent data processing and combined with cloud computing and Internet of Things technologies, has already been promoted and applied in the cultural tourism industry. In the same year, the Secretary of the Zhejiang Provincial Party Committee also responded to the call of the Central Government and proposed to “Digital empowerment”, continuously deepen the construction of “Digital Zhejiang”, and use the digital transformation of the government to drive the digital transformation of economic governance, social governance, cultural governance and ecological governance. This speech has pointed out the direction for the development of Zhejiang’s

digital empowerment of the cultural and tourism industry, and has also accelerated the process of digital empowerment in the high-quality development of cultural and tourism. In this context, it is worthwhile to further study how tourism can be further developed and how the digital economy can empower the integrated development of the cultural and tourism industry.

1.1. The digital economy

Domestically and internationally, there is no unanimity on the definition of the digital economy. As a nascent economic form, the digital economy is comprised of huge data, clever algorithms, and an arithmetic platform. Using the arithmetic platform as the foundation, clever algorithms may accomplish the processing, analysis, and storing of large amounts of data, among other operations.

In return, they provide assistance and services for the transformation and upgrading of the industry, as well as the optimal use of resources. As can be observed, big data, intelligent algorithms, and mathematical platforms are the main pieces of the foundation of the digital economy, and the three elements complement and support one another, delivering a significant boost to high-quality economic development.

Moreover, from the standpoint of the digital economy’s development trajectory, it is primarily separated into two aspects: digital industrialization and industrial digitization. Digital industrialization, i.e., the process of transitioning and transforming digital technology into industry, provides technology, products, and solutions for the development of the digital economy and ultimately manifests as new industries in economic development, such as artificial intelligence, cloud platforms, etc. Industrial digitization is the process of digitally upgrading conventional industries through the integration of digital technology, thereby realizing the innovative development of traditional industries and contributing to the enhancement of product quality and efficiency.

1.2. Cultural tourism industry

The incorporation of culture enriches the connotations of the tourism industry and provides it with a vital resource. The tourism industry provides a platform for the cultural industry’s development and becomes an important means of promoting and fostering it. Integration between the two is not only necessary for the development of their respective industries but also for the performance of the industry in accordance with the times and social development in the context of new economic growth. At this time, the integration of cultural tourism has become a new direction for the development of the cultural industry and the tourism industry, and as soon as the concept of a cultural tourism industry was proposed, it received widespread attention and recognition from people of all walks of life.

In reality, the cultural and tourism industry is a very broad concept, encompassing primarily the development of cultural and tourism resources, cultural and tourism industry technology, cultural heritage preservation, art performances, etc., and its market primarily encompasses all types of businesses operating within the cultural and tourism sector's jurisdiction. With the intensification of industrial integration, the original boundaries between the cultural industry and the tourism industry gradually dissolved, and the two industries quickly formed an interdependent, complementary, and supportive relationship, realizing the sharing of industrial resources and eventually presenting themselves to the world as a new industrial form, the cultural and tourism industries. The concept of cultural tourism and the growth of the industry are predicated on the gradual improvement of people's consumption concepts and needs, primarily to meet their individualized and diverse consumption requirements. To continue to meet the dynamic and individualized development of the consumer market, the cultural tourism industry must place innovation at its core. This has resulted in a variety of cultural tourism products and services, such as the creation of themed tourism products and customized and personalized forms of tourism, all of which have led to a greater emphasis on the connotations of tourism products, thereby promoting the high-quality growth of the cultural tourism industry.

2. The positive effects of the digital economy on the development of the cultural and tourism industry

2.1. Accelerate the pace of integrated cultural and tourism industry development

The integration of the cultural and tourism industries is a necessity for the industry to adapt to the evolution of the times and meet the demands of the consumer market. The cultural and tourism industries are intrinsically intertwined, with tourism providing the impetus and platform for cultural development and the cultural industry contributing significantly to the enrichment of tourism resources. As far as the consumer is concerned, the selection of travel products is based not only on natural resources but also on the destination's local culture, which is the manifestation of culture. With the advancement of technology, any industry that wishes to achieve high quality and added value must inevitably rely on technological support; the cultural tourism industry is no exception. It has been demonstrated that the integration of information technology in the development of the cultural tourism industry has not only accelerated the upgrading of the industry but also indicated a new direction for its development, thereby strengthening the integration between the cultural industry and the tourism industry and providing a source of energy for the high-quality and high-level development of the cultural tourism industry.

2.2. Laying the groundwork for the modernization and expansion of the cultural tourism sector

With tourism becoming a popular and regular leisure and entertainment activity, the tourism market has grown by leaps and bounds, particularly in the early stages of the industry's growth, when travel became the most popular way for people to unwind during their vacations. At this stage of development,

there was a certain blindness in people's choice of tourism products, and with the improvement of the tourism market and the increase in people's consumption demand, especially under the influence of overseas travel, the domestic tourism market presented a series of problems, such as single tourism products, a lack of characteristics, and low quality of products, which greatly diminished people's confidence in the domestic tourism market and reflected negatively on the domestic tourism industry. It also demonstrates the urgency and necessity of integrating the tourism and cultural industries. In the context of the digital economy, the cultural tourism industry is undergoing digital transformation and development to restore and enhance the current needs and expectations of people for travel, meeting the needs of people for Chinese culture and civilization during the travel process, so that the cultural tourism industry can always keep up with social development trends, emphasizing the cultural connotations of the destination. This will allow the cultural tourism industry to keep up with social trends, highlight the cultural connotations of the tourism industry, promote Chinese culture, and encourage the innovative growth of the cultural tourism industry.

2.3. Digitization of the cultural tourism industry is an inevitable trend to achieve industrial upgrading and development

In the information age, information technology has transcended its original specialization to become a way of life and an attitude toward life, and it plays a pivotal role in the lives of people. Faced with such social trends, the digitization of industry has become an unavoidable choice and trend. The best course of action for the cultural and tourism industries in the information age is to adapt to the times and keep the development concept in line with people's lifestyles. The digital development of the cultural tourism industry is based on the demands, which not only responds to the current development trend but also satisfies people's demand for travel products, opens up new channels for the development of cultural tourism products, and propels the cultural tourism industry's brand to a new stage of development.

2.4. Provide a driving force for the sustainable development of the cultural tourism industry

At this time, the integration of the cultural and tourism industries is still in the developmental phase; whether in terms of form, content, or direction, there is still room for growth and improvement. As China's economy enters a new normal stage of development, the high quality of economic development will drive people's demand for a high quality of life; this demand will determine the direction of the cultural tourism industry's development. From the current state of the cultural tourism industry's development, experience and emotion have become the primary drivers of people's demand for cultural tourism products, and the urgent problem facing the cultural tourism industry is how to continue to meet people's inner and emotional expectations. Taking into account the benefits of the digital economy, it can serve as a catalyst for industrial development and the introduction of new technologies and services. Therefore, the digital development of the cultural tourism industry will undoubtedly lead to an improvement in the quality of its products and services, as well as provide energy and technical

support for the innovative growth of businesses. Emerging types of digital museums are representative of the digital transformation of the cultural industry. The use of digital technology to customize the interpretation of museum collections satisfies visitors' sense of experience and enhances their sense of participation while also innovating the presentation of artifacts and their impressions of them.

3. Strategies for the integration of the digital economy and the cultural tourism industry

3.1. Improving the policy system to create an environment for the digital development of the cultural tourism industry

The government should play a leading role in the integrated development of the city's cultural and tourism industries, utilizing administrative advantage and administrative power to promote the digital development of the cultural and tourism industries while creating a favorable external environment for the integrated development of the industries. Clarify the positive role played by the integrated development of the cultural and tourism industries in promoting the city, and enhance initiative and awareness in the digital development of the cultural and tourism industries. Furthermore, an in-depth interpretation of national, provincial, and relevant departmental policy documents, combined with the current state of the region's cultural and tourism industry development, targeted, planned, and step-by-step development of cultural and tourism industry special development plans and objectives, and the introduction of the digital development of the cultural and tourism industry from policy and system, will help.

3.2. Seeking business convergence between the cultural and tourism industries

For the cultural tourism industry, it is necessary to take full advantage of the digital economy, change development concepts and priorities, accelerate the integrated development of the cultural tourism industry, and strengthen the development of the industry's content. First, enhance the connotative growth of the cultural tourism sector. Focus on the development and utilization of the region's cultural resources, create brands with local characteristics, capitalize on the local celebrity effect, and continue to expand the cultural and artistic sphere's influence. and actively seek the balance and connection point between culture and tourism resources in order to achieve the matching and integration of cultural and tourism resources, thereby imbuing tourism resources with cultural connotations and value. Create a professional cultural and tourism brand and enhance the planning level for the promotion of cultural and tourism products. On the one hand, seek in-depth cooperation with cultural institutions to enhance the connotation of cultural tourism products. At the same time, product promotion planning should be modern and focused on reflecting the characteristics of staying current, as well as on seeking out content and elements of traditional culture that can guide the values and spirits of modern people and using them as entry points for product promotion to establish the city's cultural tourism industry brand. Utilize the benefits of digital technology to enhance the innovative development of cultural tourism products, improve the technological nature of cultural

tourism products, and establish a distinctive style for products. The government should encourage relevant enterprises and organizations to actively explore new ways of integrating and developing the cultural tourism industry and support and protect them in terms of policies and systems, such as credit policies, investment, and financing.

3.3. Effective use of digital technology to enrich the form of cultural and tourism products

Using the advantages of digital technology, enrich the form of cultural and tourism products and promote the intelligent development of the cultural and tourism industries. On the one hand, through the effective integration of the cultural and tourism industry and the digital economy, consumers are guided to transform from offline entity consumption to new consumption patterns such as online consumption and intelligent consumption carried out on the Internet platform, so as to realize the digital, intelligent, and networked development of the cultural and tourism industry, which not only reflects the consistency of the cultural and tourism industry with The Times and social development. It is also an important way to promote the innovative development of the cultural and tourism industries and improve the quality and level of service. Cultural and tourism enterprises, in particular, should actively introduce digital technologies, build networked cultural and tourism industry platforms, enrich and improve the functions of online platforms, not only to achieve product diversification but also to fundamentally alleviate the labor shortage faced by tourism enterprises in future development. At the same time, they also attract those consumers who cannot go out due to special reasons but are eager to travel. More importantly, in the face of the normal epidemic situation, the "Contact-less service" built by the digital economy greatly meets people's demand for travel safety. In addition, the active application of digital technology provides great convenience for the publicity work of various museums and tourist attractions.

The comprehensive outbreak of COVID-19 in 2020 greatly hindered the integrated development of the cultural and tourism industries, but at the same time, it also forced the industry to change its development thinking and seek innovation and breakthrough. In this context, it also accelerates the process of digital development in the cultural and tourism industries. At the present stage, the emergence of virtual reality technology, online video, platform interaction, and other forms make up to a large extent for the regret of many consumers who cannot travel due to the epidemic and realize the diversified development of cultural publicity. At present, many national window platforms have launched special cultural travel publicity function modules, through which the public can visit the online virtual exhibition hall. This model is not only novel but also welcomed by many young people. In the future, this mode of online display will be further promoted and optimized, and together with offline physical exhibitions, it will become an important boost to promote the high-quality digital development of the cultural and tourism industries.

Nowadays, the technology level of our cultural industry is relatively low. Most enterprises do not have specialized web pages, but they do have electronic commerce or cultural activities similar to cloud exhibitions (technology applications). Affected by the epidemic, people's lifestyle, consumption pattern, and consumption content have changed significantly. Online games, digital music, distance education,

and other emerging forms of cultural and technological integration have become the new hot spots of cultural consumption. The government also actively integrates digital cultural resources to launch online public cultural services, but most cultural enterprises still need to be strengthened. The cultural industry is a new industry developed in the 20th century with the support of national or enterprise scientific and technological innovation, the promotion of capital, and the power of mass consumption. Digital technology has also exerted many influences on the operation of modern society. From economic development, industrial innovation, government governance, public service, social participation, interpersonal interaction, ecological environment, educational mode, and cultural participation, all have undergone fundamental changes with the development of the digital environment. Take culture as an example. The development, production, dissemination, application, and participation of culture are no longer positioned as different stages of the assembly line, but closer to the important nodes of continuous interaction with each other in the network. In the digital age, the core of the operation of the network of cultural value will be various data that have shown explosive growth at present. What digital technology brings is not only a rapid increase in the speed of cultural transmission (such as in a 5G communication environment), but also a fundamental change in the mode of cultural creation, participation, and sharing (such as the application of advanced technologies such as big data, artificial intelligence, cloud computing, the Internet of Things, block-chain, and intelligent robots).

3.4. Enabling the integration of multiple resources

The development of cultural and tourism integration within the context of the digital economy is a systematic and long-term project, and its quality development requires the integration and collaboration of numerous resources. First, it is necessary to optimize the human resources team's organizational structure and enhance their information and digital literacy. Therefore, on the one hand, it is necessary to improve the digitization and information technology knowledge of the existing workforce so that they can play a larger role in the digital development of the industry. On the other hand, it is essential to actively introduce talent, develop a comprehensive introduction mechanism for shortages and specialized talent, and provide attractive compensation and promotion mechanisms. The "return" and "attraction" of local talents to participate in the development and construction of their hometowns should receive special consideration. In addition, schools and businesses should work together to cultivate digital talent with extensive professional knowledge and a broad perspective on cultural tourism. To create a regional cultural and tourism industry app to promote regional cultural and tourism products, a sophisticated digital platform must be developed. Concurrently, an online display platform will be developed to provide consumers with diverse forms of cultural promotion, to upgrade cultural and tourism products, and to promote the rapid development of the cultural and tourism industry in the region.

4. Specific initiatives to integrate the development of the cultural tourism industry with digital empowerment in Zhejiang Province

4.1. Create a cultural and tourism brain to improve decision-making in cultural and tourism industry development

In 2018, "Poem Zhejiang: Cultural and Tourism Information Service Platform" was founded by the Zhejiang Provincial Department of Culture and Tourism. The project was included in the first group of Zhejiang Provincial Government digital transformation priority projects. As the process of cultural and tourism integration accelerates, the process of constructing the cultural and tourism brain of Zhejiang becomes increasingly intense. The Zhejiang Provincial Cultural Tourism Brain's specific contents include: integrating and collecting information data resources from various cultural and expo venues, art venues, libraries, intangible cultural heritage centers, cultural centers, etc.; forming service norms for data collection, technical operation, and peacekeeping; and dynamically monitoring the operation of various venues. Strengthen the analysis and utilization of cultural data, conduct research, and form a big data evaluation system for high-quality tourism development. Construct the nation's first high-quality tourism development evaluation index system based on big data analysis. Strengthen the level and use value of data governance, establish the data of the three major operators (OTA, airlines, high-speed rail, etc.), enhance the accuracy and timeliness of data, conduct research and develop data analysis models, and provide a basis for resource development, industrial financing, cultural services, etc. Accentuate the big data construction of red cultural tourism and island tourism and construct the big data center of red cultural tourism and Island Park in collaboration with Jiaxing and Zhoushan in order to facilitate the decoding of red cultural genes, red tourism, and the growth of Island Park.

4.2. Strengthen public services and create a digital life service scene where culture and tourism intermingle

The primary issue in digital transformation work is how to create digital application scenarios that are popular with the public and effective for the government. In recent years, the digital tourism platform has served more than 20 million people per year, but user-tailored service scenarios are still absent. The next step should be to adhere to an overall collaborative approach to work, emphasize overall business synergy, strengthen multi-business synergy and cooperation, and continue to solicit and launch a number of cultural and tourism application scenarios in order to better meet diverse and individualized cultural and tourism consumption needs. Specifically, these include: strengthening the integration and utilization of cultural and tourism information; bringing together real-time information on art performances, cultural and museum exhibitions, and scenic spot activities; integrating tourism-related information on education, sports, agriculture, and rural life across departments for unified release to tourists; creating an art digital media service platform that integrates artists, artworks, and art services; and establishing an art digital media service platform that integrates artists, artworks, and art services. Increase

spending on intelligent cultural tourism, digitally transform existing cultural and museum venues and resources, and employ artificial intelligence, driver-less vehicles, and other technologies to create “future museums”, “future libraries”, “future art museums” and “future scenic spots”. In addition, the project will enhance the fundamental support for applications such as cloud computing, VR/AR, holographic imaging, intelligent navigation, and mobile wearable devices.

4.3. Improve precision intelligent control to achieve closed-loop supervision in key areas of the cultural tourism industry

The realization of precise and intelligent control of the cultural tourism industry is a requirement for the modernization of provincial governance. According to the deployment of the Ministry of Culture and Tourism on the supervision and monitoring of the cultural tourism industry, the province will seriously implement a precise, strict, and intelligent control and closure loop, implement the normal control of “reservation, flow restriction, and peak staggering” in scenic spots, strengthen the interconnection and collaborative application of data, and extend to internet cafes, cultural and museum units, performing arts enterprises, and so on. At the same time, it will strengthen risk warning in the industry, forming a comprehensive risk warning mechanism such as passenger overload warning, credit risk warning, fire and theft risk warning, and negative public opinion risk warning, and forming a closed loop with the law enforcement system.

4.4. Strengthen dynamic data management and enhance cultural and tourism data governance

With the development of new technologies such as 5G, artificial intelligence, and the industrial internet, the volume of data in various industries will show a new round of explosive growth, and related services around data collection and collation will also flourish. Data governance includes data collection, collation, exchange, sharing, analysis, and other aspects, and its level of governance directly affects the effective development of businesses. At present, Zhejiang Province has taken the lead in the country in building a cultural tourism data warehouse, bringing together 29 types of basic cultural tourism data totaling 1.6 billion items. But there are also problems such as irregular data collection, lack of precision, and lack of in-depth model analysis, which directly affect the use of data, and there is still much room for improvement in the foresight, precision, and efficiency of cultural tourism data analysis. The next step should be to rely on the “Zhejiang Province Culture and Tourism Data Collection Specification”, establish a province-wide unified basic data grading and dynamic management system, dynamically maintain management, improve the accuracy of basic data, strengthen the data multi-dimensional verification and traceability mechanism, and enhance the majority of source management and traceability. In terms of mechanism, it will continue to strengthen the collaboration and sharing with horizontal departments such as public security and transportation, broaden the dimension of shared data, and improve the quality of shared data. In terms of application, with practicality and innovation as the goal, continue to strengthen research and explore the design of thematic data models such as island tourism and red tourism, so as to lead

the way with points, and continue to deepen and continuously improve the accuracy, foresight, and efficiency of cultural tourism data analysis.

4.5. Proposal and application of a “city brain” system for multi-dimensional analysis of visitor behaviour

In April 2016, Hangzhou officially proposed the concept of “city brain”, which involves multi-source, heterogeneous and multi-modal data across the entire spectrum of socioeconomic development. These data are characterized by large structural differences, wide sources and real-time updates. Although data processing poses certain challenges to tourism services and information management, it also provides effective methods for knowledge acquisition, organization as well as utilization in a big data environment. In the past two years, various application scenarios built on the central system of the city brain have entered every aspect of people’s lives, among which there are several changes in the tourism industry as follows.

Visitor behaviour mainly includes consumption behaviour and activity behaviour, both of which are also key concerns in the normalization of epidemic prevention and control, and with the empowerment of City Brain, the analysis dimension involves more fields. Traditional consumption behaviour data mainly comes from hotels, scenic spots, travel agencies, etc., but with City Brain’s empowerment, consumption behaviour data includes financial and transportation fields, covering a wider range of areas. In addition, it has solved the problem of data silos in traditional information systems and achieved data circulation and integration, turning data from passive to active, from the backstage to the front-stage, building a complete and more refined portrait of tourists’ consumption behaviour, and more adequate analysis of tourists’ needs and better tourism products. It involves greater space and time in terms of activity behaviour. Through the data synergy of the traffic department and ticketing system of scenic spots in the City Brain system, the popular routes of tourist destinations are analyzed, as well as the demand of tourists for different hotels in different seasons and the time of going out for activities. Through the above multi-dimensional data synergy analysis, it can help subjects such as scenic spots and B&B’s to adjust their prices and optimize the supply of products and services in a timely manner.

5. Summary

Integration of the cultural and tourism industries is a current development trend and a crucial means of promoting new economic output and optimizing and modernizing the industrial structure. Based on this, it is necessary to conduct an in-depth analysis of the benefits, entry points, and focal points between the two in order to realize their integration more effectively. The emergence of the digital economy can facilitate the development of the cultural tourism economy, thereby providing impetus for the industry’s growth and fostering its upgrading and innovative development. Therefore, each region should fully explore the exceptional local cultural resources, actively explore the integration point with tourism resources, and, with the aid of digital technology, make every effort to establish a platform for the development of a diversified cultural tourism industry and promote the digital growth of the regional cultural tourism industry.

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