

Research on the Coordinated Development of Digital Technology and Cultural Tourism Industry Based on Coupling Coordination Degree Model: A Case Study of Four Provinces (Municipalities) in Southwest China

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Abstract

In recent years, digital technology has played a prominent role in empowering key aspects such as supply, dissemination, display, and management in the cultural and tourism industry, and is widely recognized as a crucial engine for the high-quality development of the cultural and tourism sector. To explore the theoretical mechanism and practical path for the coordinated development of the cultural and tourism industry in the four provinces (municipalities) in Southwest China, this paper constructs an evaluation index system for the integrated development of digital technology and the cultural and tourism industry, analyzes the coupling coordination degree of the integration of the cultural and tourism industry, and on this basis, studies the impact of digital technology on the coordinated development of the cultural and tourism industry in the four provinces (municipalities) in Southwest China. Firstly, taking digital technology as the background of the times and the four provinces (municipalities) in Southwest China as the research object, it shifts from single policy recommendation research to diversified empirical research. Secondly, it introduces the coupling coordination degree model and the mediating effect model, and measures the degree of integration of the cultural and tourism industry in the four provinces (municipalities) in Southwest China through three steps: clarifying the measurement object, constructing the measurement model, and establishing the evaluation system. Thirdly, based on the empirical test model, it measures the empowerment effect of digital technology on the integrated development of the cultural and tourism industry in the four provinces (municipalities) in Southwest China, and then explores the main direction of the coordinated development of the cultural and tourism industry under the influence of digital technology. Finally, it puts forward suggestions for the empowerment of digital technology in the coordinated development of the cultural and tourism industry in the four provinces (municipalities) in Southwest China.

Keywords

Digital Technology; Cultural Tourism Industry; Coordinated Development; Coupling Coordination Degree Model

1. Introduction

In 2020, the Ministry of Culture and Tourism also emphasized in the "Opinions on Promoting the High-quality Development of the Digital Cultural Industry" that in order to accelerate the integrated development of culture and tourism under the pattern of digital technology, the key is to scientifically grasp the evolutionary relationship between the integration of digital technology and the cultural and tourism industry. In the context of high-quality development, empowering the integration of culture and tourism with digital technology, and integrating digital technology and digital infrastructure into all aspects of the cultural and tourism industry, is the key path to improve the quality and efficiency of digital cultural tourism. In 2021, the Ministry of Culture and Tourism of the People's Republic of China also made specific plans for how to use digital technology to empower cultural and tourism innovation in the 14th Five-Year Plan for Cultural and Tourism Science and Technology Innovation. According to the White Paper on China's Digital Technology Development (2022) released by the China Academy of Information and Communications Technology (CAICT) in 2022, China's digital technology accounted for 39.8% of GDP as of 2021. However, at present, the tourism industry is facing the dilemma of slow transformation and upgrading, insufficient cultivation of new business formats and imbalance in the structure of supply and demand, the integration of the cultural and tourism industry is insufficient, and the long-term mechanism of cooperation with digital technology needs to be improved. Therefore, it is of great significance to scientifically examine the synergistic relationship between the integration of digital technology and the cultural tourism industry, and explore the factors affecting the synergistic development of the two, so as to extend the digital consumption scenario, promote the transformation, upgrading and innovative development of the cultural tourism industry, and build a new pattern of the development of the digital cultural tourism industry.

At present, some domestic scholars focus on analyzing the benefits of digital technology in the cultural and tourism industry when discussing the impact of digital technology on the integration of culture and tourism, and Li Xinjian et al. (2022) believe that the effective use of digital technology in the process of cultural and tourism integration is one of the key and difficult points to promote the high-quality development of cultural and tourism integration. Dai Bin (2020) believes that the development of digital technology is a major change in the supply-side production and delivery mode of the cultural tourism industry. Huang Xiankai (2021) analyzed the integrated development strategy of culture and tourism from the perspective of internal and external power, and believed that scientific and technological innovation

is the path of integrated development of culture and tourism. Some studies believe that the digitalization of the integration process of culture and tourism is an effective measure to meet the diverse needs of residents in the post-epidemic era. Zhou Jin and Wang Tingxin (2021) advocate that digital transformation is one of the ways to integrate urban culture and tourism; Wu Jiang (2022) believes that digital technology can enrich the style and format of cultural and tourism integration; Wei Pengju (2022) believes that the development of digital technology is an important way to extend the "culture + tourism" industry chain.

Some domestic academic circles tend to discuss the integration of digital technology and cultural tourism industry from the aspects of integration status, integration direction, integration mode, and integration path. Xia et al. (2020) pointed out that "the digital transformation of the industry and the improvement of public services and policy systems" will bring about changes in the development model of the cultural tourism industry. Zhou Jin and Wang Tingxin (2021) proposed that the integrated development of culture and tourism includes three types: "industrial chain restructuring model driven by supply-side structural reform, industrial chain value co-creation model guided by cultural demand, and industrial chain extension model driven by digital technology". Cai Shangwei and Ding Jinxi (2021) evaluated the current situation of the integration of Chengdu's cultural tourism industry and digital technology from three aspects: technology integration, product integration, and business integration, and proposed solutions. Hu Youxuan (2022) believes that the integration of culture and tourism driven by digital technology requires reform and innovation from the three levels of "supply side, demand side, and regulation side".

In view of this, this study takes the four provinces (cities) in southwest China as the research object, takes digital technology as the background of the times, measures the data and main difficulties of the development status of the cultural tourism industry in the four provinces (cities) in southwest China, constructs the evaluation index system of cultural industry and tourism industry, and uses the coupling coordination degree model of the two systems to measure the development level of cultural and tourism integration. Based on the infrastructure level and development characteristics of digital technology, a three-dimensional digital technology evaluation index system was constructed, and the development level of digital technology in four provinces (cities) in southwest China was comprehensively evaluated. Finally, the empirical test model is comprehensively used to explore the enabling effect of digital technology on the coordinated development of the cultural and tourism industry in the four provinces (cities) in Southwest China.

2. Mechanism of action and research hypothesis

2.1. The direct effect of digital technology empowering the integrated development of the cultural and tourism industry

From the perspective of cultural and tourism products, the integration and display of cultural and tourism products is a direct way for consumers to enjoy the dividends of cultural and tourism integration, but before the display, it is necessary to solve the problem of how to intuitively express cultural products together with tourism products, and the embedding of digital technology helps to realize the three-dimensional and visual presentation of cultural connotation, so as to realize the organic unity of "god" and "shape" of cultural and tourism products, and empower the integration of culture and tourism; In addition, the development of digital inclusive finance can make the financing of cultural and tourism enterprises convenient and reduce the investment risk of enterprises to a certain extent[12]. From the perspective of dynamic monitoring of the cultural tourism market, the intervention of digital technology can use big data to quickly capture and accurately transmit customer needs, which will help cultural and tourism enterprises actively respond to market demand, accurately develop cultural tourism products and provide cultural tourism services, so as to make the overall supply more in line with market demand and realize the supply-side structural reform of the cultural tourism industry. Therefore, this paper proposes the following research hypotheses:

Hypothesis 1: Digital technology can significantly promote the integrated development of the cultural and tourism industry.

2.2. The intermediary effect of digital technology empowering the integrated development of the cultural and tourism industry(Sub-Heading 2.2)

Digital technology can empower the integration of culture and tourism by driving the optimization of industrial structure. First of all, the penetration of digital technology into the cultural and tourism industry can stimulate new business formats, extend the industrial chain and value chain, and bring new added value to the integration of culture and tourism. With the vigorous development of digital technology and smart tourism, the "digital cultural tourism ecosystem" is taking shape, including digital exhibitions, digital cultural museums, immersive interpretation and intelligent hotels, etc., digital cultural tourism has become an important starting point for the region to achieve overall digital transformation and industrial structure optimization, and has also become an important way to optimize the cultural tourism industry structure. Secondly, digital technology can break the barriers to integration between different industries, change the internal structure of the cultural and tourism industry, and expand the scope of cultural and tourism integration. Digital technology connects different industries and fields in series with an invisible network, closes the relationship between the cultural and tourism industry and the primary and secondary industries, uses digital platforms to promote local characteristic industries, cultivates Internet celebrity IP with tourism attraction, and further stimulates the vitality of cultural and tourism integration. Finally, digital technology can break through geographical restrictions, realize the cross-regional complementarity of cultural and tourism resources, information transmission, and pas-

senger flow, and promote the collaborative optimization of industrial structure in space. The digital cultural tourism service platform of the regional cooperation demonstration zone has become a new channel to promote regional cultural and tourism cooperation, which can quickly excavate, distribute, and integrate the overall tourism resources and cultural heritage of the region, form a publicity method with regional characteristics for the market, and enhance the overall core competitiveness of regional cultural and tourism development, so as to realize the integrated development of cultural and tourism between regions. Therefore, this paper proposes the following research hypotheses:

Hypothesis 2: Digital technology develops synergistically with the cultural and tourism industry through industrial structure optimization and technological innovation.

3. Study design

3.1. Description of the variable

3.1.1. Explanatory variables

This paper refers to Liao Xinlin et al. (2021) and Wu Jingfei et al. (2022) to use the entropy method to measure the development level of digital technology in three aspects: digital infrastructure, digital industry development, and digital industry environment.

Table 1. Digital technology evaluation index system.

Dimension	Level 1 Indicators	Serial Number	Secondary Indicators	Direction Of Action
Digital Technology	Digital infrastructure	X1	Fiber Optic Cable Length (km)	Forward Direction
		X2	Number Of Mobile Phone Base Stations (10000)	Forward Direction
		X3	Number Of Internet Broadband Access Ports (10000)	Forward Direction
		X4	Internet Broadband Access Users (10000 households)	Forward Direction
	Development of Digital Industry	X5	Total Telecommunications Business Volume (in billions of yuan)	Forward Direction
		X6	Software Business Revenue (RMB 10000)	Forward Direction
		X7	Output Value Of Information Service Industry (in billions of yuan)	Forward Direction
		X8	Employment Of Urban Units In The Information Transmission, Software, And Information Technology Services Industry (10000 people)	Forward Direction
	Digital Industry Environment	X9	Internet Related Practitioners	Forward Direction
		X10	Employed Personnel In Urban Units (10000 yuan)	Forward Direction
		X11	Number Of Employees In The Information Service Industry (10000 people)	Forward Direction

3.1.2. Explained variable

This article sets the level of integrated development of cultural and tourism industries (CTI) as the dependent variable, and selects the cultural and tourism industries of four provinces (cities) and five provinces (cities) in Southwest China as the objects. The entropy weight method is used to measure the tourism and cultural industry development subsystems, and calculate the coupling coordination between the cultural and tourism industries of the four provinces (cities) in Southwest China.

Table 2. Evaluation Index System for Integrated Development of Cultural and Tourism Industries.

Dimension	Level 1 Indicators	Serial Number	Secondary Indicators	Direction Of Action
Culture Industry	Industrial scale	C1	Number Of Museums (Units)	Forward Direction
		C2	Number Of Public Libraries (Unit)	Forward Direction
		C3	Number Of Artistic Performance Groups And Institutions	Forward Direction
		C4	Number Of Cultural Market Operating Institutions (Units)	Forward Direction
		C5	Employment Personnel In Urban Units Of Culture, Sports, And Entertainment Industry (Individuals)	Forward Direction
	Industrial benefits	C6	Fixed Assets Investment In Culture And Related Industries (10000 Yuan)	Forward Direction
		C7	General Public Budget For Culture, Sports, And Media (In Billions Of Yuan)	Forward Direction
		C8	Operating income of cultural and related industry enterprises above a certain scale (RMB 10000)	Forward Direction
		C9	Per Capita Expenditure On Education, Culture, And Entertainment For Urban Residents (yuan)	Forward Direction
Tourism Industry	Industrial Scale	T1	Number Of AAAA Level Or Above Tourist Attractions	Forward Direction
		T2	Number Of Travel Agencies (Bouseholds)	Forward Direction
		T3	Number Of Star Rated Hotels (Units)	Forward Direction
		T4	Employment Of Urban Units In The Accommodation And Catering Industry (10000 People)	Forward Direction
	Industrial Benefits	T5	Domestic Tourism Revenue (In Billions Of Yuan)	Forward Direction
		T6	Domestic Tourist Arrivals (10000)	Forward Direction
		T7	Number Of Inbound Tourists (10000)	Forward Direction
		T8	Inbound Tourism Revenue (USD 10000)	Forward Direction

3.1.3. Mediating variables and control variables

Using the mediation effect model to explore the role path of digital technology in empowering the integrated development of culture and tourism, the mediating var-

ables are selected as industrial structure optimization (ISO) and technological innovation (TI), represented by the proportion of added value of the tertiary industry to GDP and the number of patent applications and authorizations, respectively. Taking other factors that affect the integrated development of culture and tourism as control variables, the level of economic development (EDL) is the economic pillar that promotes the integrated development of culture and tourism, measured by per capita GDP; The level of government support (GSL) promotes the integrated development of culture and tourism, expressed as the proportion of public service expenditure to GDP; Material capital investment (MCI) and human capital investment (HCI) are the basic investment for the integrated development of culture and tourism, and are the important engines to stimulate the output of cultural and tourism industry achievements. They are measured by the amount of fixed assets investment in the whole society and the proportion of employment in the tertiary industry; The level of transportation development (TDL) has spillover effects, which can expand the radiation range of integrated cultural and tourism development, drive a larger range of integrated cultural and tourism development, and be measured by the total mileage of railways and highways.

Table 3. Related Variables and Explanations.

Variable Properties	Variable	Symbol	Variable Explanation
Intermediary Variable	Industrial Structure Optimizing	ISO	The Proportion Of Added Value Of The Tertiary Industry To GDP (%)
	Technological Innovation	TI	Number Of Patent Applications Authorized (Units)
Control Variable	Level Of Economic Development	EDL	Per Capita GDP (10000 Yuan)
	Government Support Level	GSL	Proportion Of Government Public Service Expenditure To GDP (%)
	Development Level Of Transportation	TDL	Total Mileage Of Railways And Highways (10000 Kilometers)
	Material Capital Investment	MCI	Fixed Assets Investment Of The Whole Society (10000 Yuan)
	Human Capital Investment	HCI	Proportion Of Employment In The Tertiary Industry (%)

3.2. Model construction

3.2.1. Entropy weight method

The entropy weight method can fully utilize the information of raw data, and its results can accurately reflect the differences between various evaluation schemes, making it more objective. Therefore, this article adopts the entropy weight method to measure the level of digital technology development. Establish j matrix of rows and columns, with ma total of years and n indicators, X_{ij} representing the

i year and indicator. Firstly, standardize the indicators to eliminate dimensional differences between different indicators:

$$\text{For positive indicators } X_{ij} = \frac{X_{ij} - X_{ij}(\min)}{X_{ij}(\max) - X_{ij}(\min)};$$

$$\text{For negative indicators } X_{ij} = \frac{X_{ij}(\max) - X_{ij}}{X_{ij}(\max) - X_{ij}(\min)};$$

Next, calculate the proportion of the indicator value in j th the year under the i th indicator to that indicator: $P_{ij} = \frac{X_{ij}}{\sum_{i=1}^m X_{ij}};$

The entropy value of the j th indicator is $e_j = -k \sum_{i=1}^n P_{ij} \log(P_{ij})$, where $k = \frac{1}{\ln(m)}$ and $k > 0$;

The coefficient of difference for the j th indicator g_j is $1 - e_j$; The weight of the j th indicator $W_j = \frac{g_j}{\sum_{j=1}^N g_j};$

Ultimately determine the level of digital technology development $DTDI = \sum_{j=1}^N W_j \times P_{ij}$

3.2.2. Coupling coordination degree model.

Construct a coupling coordination degree model to measure the integration and development status of regional cultural and tourism industries using the coupling coordination index, where c and t represent the comprehensive development scores of cultural and tourism industries, respectively; C is the coupling degree between two systems; T is the comprehensive development index; D represents the coupling coordination between the cultural industry and the tourism industry, and in this article represents the index of integrated development of culture and tourism. The formula is as follows:

$$C = \left[\frac{c \times t}{\left(\frac{c+t}{2} \right)^2} \right]^{\frac{1}{2}} \quad (1)$$

$$T = \frac{1}{2} (c + t) \quad (2)$$

$$D = \sqrt{C \times T} \quad (3)$$

3.2.3. Mediation effect model.

To further examine the impact mechanism of digital technology on the integration of culture and tourism, a mediating variable was selected to construct a mediating effect model. Among them, M_{it} is the mediator variable, representing industrial structure optimization (ISO) and technological innovation (TI) in this article; β and θ are coefficients to be estimated. The formula is as follows:

$$M_{it} = \beta_0 + \beta_1 X_{it} + \mu_i + y_i + \xi_{it} \quad (4)$$

$$CTI_{it} = \theta_0 + \theta_1 IE_{it} + \theta_1 M_{it} + \theta_3 X_{it} + \mu_1 + y_i + \xi_{it} \quad (5)$$

Equation (4) is used to examine the impact of digital technology on industrial structure optimization and technological innovation, while Equation (5) is used to analyze the combined effects of digital technology and mediating variables on cultural tourism integration.

3.3. Data source.

Due to the lack of statistical data in Xizang Province, and the large data missing value after 2020, which has a great impact on the model, this paper selects the evaluation index data of four provinces (cities) in southwest China from 2015 to 2019 as the analysis object. The data related to digital technology comes from the relevant years' China Statistical Yearbook, China Science and Technology Statistical Yearbook, China Third Industry Statistical Yearbook, and the statistical yearbooks of four provinces (cities) in Southwest China; The indicators related to the integration of culture and tourism are sourced from the "China Statistical Yearbook," "China Cultural Relics Statistical Yearbook," "China Culture and Related Industries Statistical Yearbook," "China Tourism Statistical Yearbook," "China Culture and Tourism Statistical Yearbook," and the statistical yearbooks of four provinces (cities) in Southwest China; Other variables are sourced from the "China Statistical Yearbook" and the statistical yearbooks of four provinces (cities) in Southwest China.

4. Empirical analysis and testing.

4.1. Analysis of the Development Level of Digital Technology.

This article uses the entropy weight method to measure the level of digital technology development in four provinces and cities in southwestern China. The results show that the level of digital technology development in the four provinces and cities in southwestern China is generally increasing year by year. The sorting results show that the regions with the fastest improvement in digital technology development level are mainly in Sichuan Province and Yunnan Province, while Guizhou Province and Chongqing have slower improvement in digital technology development level. On the one hand, Sichuan Province has relied on industries such as electronic information as its pillar industries, which have continuously developed and grown over the years, and the level of digital technology has developed rapidly. On the other hand, Guizhou Province started late in the development of digital technology, but it is also steadily improving.

Table 4. Development Level of Digital Technology in Four Provinces and Cities in Southwest China.

Provinces and cities	2015	2016	2017	2018	2019
Sichuan	0.15	0.32	0.34	0.40	0.71
Guizhou	0.51	0.33	0.36	0.34	0.34
Yunnan	0.37	0.32	0.35	0.42	0.42
Chongqing	0.42	0.25	0.21	0.11	0.02

4.2. Analysis of the level of integrated development of culture and tourism

This article uses entropy weight method and coupling coordination degree model to measure the development level of digital cultural tourism industry in ethnic regions

of China, and measures its coupling coordination degree based on the size of the coupling coordination degree D . The integration degree of the cultural and tourism industry is measured through a coupling coordination degree model, drawing on the concepts of capacity coupling and coupling coefficient models. The system coupling degree value is denoted as C , with a value of $[0,1]$. The closer the C value is to 1, the higher the degree of coupling interaction in the cultural and tourism industry. Due to the comprehensive development level of the cultural and tourism industry being measured through the linear weighted sum method. (3) In the formula, D is the coupling coordination, and its value is $[0,1]$, which reflects the coordinated development level between the cultural and tourism industries; C is the coupling degree, and T is the comprehensive coordination index of the cultural and tourism industry, with a value of $[0,1]$. a , B is an undetermined coefficient, and this article considers the cultural industry and tourism industry to be equally important. Combined with expert assignment method, a and b are both taken as 0.5.

Table 5. T-value of coupling coordination degree of cultural and tourism industries in four provinces (cities) in Southwest China from 2015 to 2019.

Provinces and cities	2015	2016	2017	2018	2019
Sichuan	0.505	0.507	0.534	0.573	0.585
Guizhou	0.305	0.334	0.355	0.380	0.404
Yunnan	0.429	0.416	0.447	0.448	0.448
Chongqing	0.372	0.380	0.411	0.445	0.468

According to Table 5, the overall level of cultural and tourism integration development in the four provinces (cities) of southwestern China has shown a trend of increasing year by year. The coordination level in Guizhou Province is between 0.3-0.4, in a state of mild imbalance. The coordination level in Yunnan Province ranges from 0.4 to 0.5, and is on the brink of imbalance. The coordination level in Chongqing has increased from mild coordination to near imbalance, and the level of integrated development of culture and tourism has rapidly developed. The coordination level of Sichuan Province ranges from 0.5 to 0.6, which is in a barely coordinated state. The level of cultural and tourism integration development in Sichuan Province has always been the highest in the southwest region.

From this, it can be seen that the level of cultural and tourism development in the four provinces (cities) in southwestern China is still unbalanced. On the one hand, there is still a gap in the development of existing industries. On the other hand, the cultural or tourism industry has achieved significant development in recent years, and the gap with another industry has increased or decreased, resulting in an improvement or decrease in the coordination level of cultural and tourism industry development.

4.3. Analysis of the intermediary effect of digital technology empowering the development of cultural and tourism industry

To clarify the mechanism of the synergistic development of digital technology and the cultural tourism industry, intermediary variables were introduced and used to test the mediating effect using equations (4) and (5). The specific regression results are shown in Table 6. Among them, columns (1) and (2) respectively represent the impact of digital technology on industrial structure optimization and technological innovation, with intensity coefficients of 1.117 and 4.376, both significant at the 1% significance level, indicating that digital technology can significantly promote industrial structure optimization and technological innovation; Column (3) represents the impact of digital technology on the integrated development of cultural and tourism industries, with an intensity coefficient of 0.123, significant at the 1% significance level, indicating that digital technology can significantly promote the integrated development of cultural and tourism industries. Hypothesis 1 holds true.

Table 6. Results of mediation effect test

variable	Industrial Structure Optimization (ISO)	Technological Innovation (TI)	Integrated Development of Cultural and Tourism Industries (CTI)		
	(1)	(2)	(3)	(4)	(5)
Digital Technology (DT)	1.117*** (0.118)	4.376*** (0.474)	0.126*** (0.027)	0.116*** (0.032)	0.079*** (0.36)
Industrial Structure Optimization (ISO)				0.027* (0.015)	
Techno- logical Innovation (TI)					0.012** (0.005)
Constant term (_coms)	4.527*** (0.558)	1.965*** (2.231)	-0.688*** (0.142)	-0.428*** (0.115)	-0.712*** (0.145)
Sample size (N)	57	57	57	57	57
control variable	YES	YES	YES	YES	YES
Determina- tion coeffi- cient (R ²)	0.724	0.748	0.785	0.836	0.793

Note: The values in parentheses are t, and *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Columns (4) and (5) respectively represent the combined effects of digital technology and industrial structure optimization, as well as technological innovation, on the integration of culture and tourism. The impact coefficients of digital technology on cultural and tourism integration in columns (4) and (5) are significantly positive, and industrial structure optimization and technological innovation have a positive impact on cultural and tourism integration at the 10% and 5% significance levels, respectively. This indicates that industrial structure optimization and technological innovation can play a mediating role, and digital technology can synergistically develop with the cultural and tourism industry through industrial structure optimization and technological innovation. Hypothesis 2 holds.

5. Conclusion and Suggestions

5.1. Conclusion

This paper measures the development level of digital technology in four provinces (cities) in southwest China, the integration development level of cultural and tourism industry, and the impact of digital technology on the development level of cultural and tourism industry in four provinces (cities) in southwest China by using entropy weight method, coupling coordination degree model, mediation effect model, and based on the relevant data from 2015 to 2019 (due to the lack of sample data, Xizang Province in southwest China is not covered for the time being). The results show that the development level of digital technology in four provinces (cities) in southwest China basically shows an increasing trend year by year, the development level of digital technology in Sichuan Province is relatively high, and the development level of digital technology in Guizhou Province is relatively low. The measurement results of the cultural and tourism industry show that the development of the cultural and tourism industry in the four provinces (cities) in southwestern China has shown a growth trend, but it is generally in a state of imbalance, with a low degree of coordination and mostly lagging tourism. Through empirical testing, the development level of digital technology has a significant promoting effect on the development level of cultural and tourism industries in the four provinces (cities) of Southwest China. Therefore, the four provinces (cities) in Southwest China should continuously improve the level of digital technology development, continuously promote the coordinated development of digital technology and cultural tourism industry, promote the digitization and intelligence of cultural tourism industry, create new digital cultural tourism formats, and enhance the brand value and strategic position of regional cultural tourism industry.

5.2. Suggestion

Improve the construction of specialized digital infrastructure for the cultural and tourism industry, and focus on the comprehensive application of digital technology throughout the entire process of the cultural and tourism industry. Using digital technology to promote the optimization and upgrading of industrial structure and technological innovation, widely adopting digital technology to enhance the ability to capture cultural and tourism information and cultivate new products; Promote the deep integration of "digital+cultural tourism", facilitate the restructuring and optimization of the cultural tourism industry chain, reshape the display form of cultural tourism products with new digital technologies, showcase the new tourism atmosphere with cultural digitization, develop smart tourism, experiential tourism, immersive tourism, enhance the quality of cultural tourism products, and meet the diverse and high-level tourism needs of tourists.

Innovate digital transformation and innovate cultural and tourism industry related activities. The cultural and tourism industry has gradually shifted from the initial

overexploitation of resources and the single development model of "relying on mountains to eat" to diversification, from closed to open, from shallow culture to deep experience, and from resource characteristics to cultural themes. Especially in the era of digital technology, the "three life integration" of production, life, and ecology, and the "three in one" of industry, culture, and tourism, creating emerging cultural and tourism has become a new path for coordinating the integration and development of regional cultural and tourism industries. Through the development model of "digital+cultural tourism", we aim to quickly establish a new regional coordinated cultural tourism industry chain system, better move towards the era of "cloud cultural tourism" under the background of digital technology, accelerate the process of digitization, virtualization, and intelligence, and promote the regional coordinated and high-quality development of China's cultural tourism industry.

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References

- [1] Li Xinjian, Song Changyao, Yin Tingting Academic reconsideration of high-quality integrated development of culture and tourism: difficulties and paths [J]. Journal of Tourism, 2022, 37 (2)
- [2] Dai Bin The Shaping and Construction of a New Pattern of Cultural Tourism Integration in the Digital Age [J]. People's Forum, 2020, (Z1)
- [3] Huang Xiankai The driving force, strategy, and path of the integrated development of culture and tourism in the new era [J]. Journal of Beijing Technology and Business University (Social Sciences Edition), 2021, 36 (4)
- [4] People's Forum Magazine Research Group, Tang Peipei, Shi Jing New expectations of the public for the integrated development of culture and tourism in Beijing in the post pandemic era [J]. People's Forum Academic Frontiers, 2021, (13)
- [5] Zhou Jin, Wang Tingxin Research on the Development Model and Path of Urban Cultural Tourism Integration under Digital Technology [J]. Jiangsu Social Sciences, 2021, (5)
- [6] Wu Jiang Research on the Promotion of Smart Tourism Innovation through Tourism Integration in the Digital Perspective [J]. Economic Issues, 2022, (5)
- [7] Wei Pengju The Path of Cultural Tourism Integration for High Quality Development of Tourism Industry in the Digital Age: Taking the Digital Development of Culture, Museum, Culture and Creativity as a Model. Guangxi Social Sciences, 2022, (8)
- [8] Xia Jiechang, He Shaojun, Xu Jinhai Digitization: A New Direction for the Integrated Development of Cultural and Tourism Industries [J]. Heilongjiang Social Sciences, 2020 (02): 51-55+159
- [9] Zhou Jin, Wang Tingxin Research on the Development Model and Path of Urban Cultural Tourism Integration under Digital Technology [J]. Jiangsu Social Sciences, 2021 (05): 70-77
- [10] Cai Shangwei, Ding Jinxiao From the perspective of industrial integration, the current situation and countermeasures of the integration of tourism industry and digital technology development: based on the investigation of Chengdu [J]. Guangxi Social Sciences,

2021 (01): 118-123

- [11] Hu Youxuan The Path of Integrated Development of Cultural and Tourism Industries Empowered by Digital Technology [J]. Business Economics Research, 2022 (01): 182-18
- [12] Fan Jianhong, Wang Bing, Yan Le, etc The impact of digital inclusive finance on the innovation resilience of high-tech manufacturing industry: a test based on system GMM and threshold effect [J]. Science and Technology Progress and Countermeasures, 2022, 39 (17)
- [13] Chen Weijun, Meng Yu Digital Empowerment Strategies for Cultural and Tourism Industries in Western Regions [J]. Journal of Central South University for Nationalities (Humanities and Social Sciences Edition), 2022, 42 (6)
- [14] Ming Qingzhong, Wei Junfeng Analysis of "Blockchain Plus" Empowering High Quality Development of Smart Tourism [J]. Academic Exploration, 2021, (9)
- [15] Zhou Jin, Wang Tingxin Research on the Development Model and Path of Urban Cultural Tourism Integration under the Digital Economy [J]. Jiangsu Social Sciences, 2021 (5): 70-77
- [16] Yu Donghua, Li Yunhan Innovation of Industrial Organizations in the Digital Economy Era: Taking the Ecological System of Industrial Chain Clusters Driven by Digital Technology as an Example [J]. Reform, 2021 (7): 24-43