

Coupling Analysis of Cultural and Tourism Integration Development in Anhui Based on Entropy Power Method

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Abstract: For the integrated development of two industries of culture and tourism in Anhui Province, firstly select the relevant indicators of culture and tourism industry in Anhui Province from 2012 to 2021, use entropy weight method and coupling coordination degree model and combine with grey correlation analysis to measure the development level of two industries of culture and tourism in Anhui Province, the degree of coupling and coordination of culture and tourism industry and the correlation between the two systems, analyze the reasons for the change of coordination level in the coupling process in Anhui Province, and put forward suggestions for promoting the deep integrated development of two industries in Anhui Province. Analyze the reasons for the change of the coordination level in the coupling process in Anhui Province, and put forward suggestions for promoting the deep integration and development of the two industries in Anhui Province in the light of the problems existing in the process of coupling and coordinating the development of the two industries in Anhui Province: (1) adhere to promote the integration of development, increase the supply of rich and diverse cultural tourism products; (2) make full use of comparative advantages, improve the market value of cultural tourism products; (3) strengthen publicity and promotion, improve the brand effect of cultural tourism; (4) improve and enhance the level of cultural tourism services, and cultivate new talents; (5) increase policy support, to provide help for the development of cultural tourism industry.

Keywords: Cultural and tourism integration, Quality improvement and expansion, Coupled coordination model, Entropy weight method, Anhui Province.

1. Introduction

The culture and tourism industry are a composite industry that integrates the two fields of culture and tourism, and has enormous economic, social and cultural value. At present, the government is actively supporting the development of culture and tourism industry, in which promoting culture and tourism consumption is an important development direction. Promoting the integration of the culture and tourism industry is of great significance for the transformation and upgrading of the tourism industry as well as the realisation of cultural inheritance [1-4]. In 2018, the establishment of the Ministry of Culture and Tourism provided institutional guarantee for the integration of the culture and tourism industry; in 2019, the General Office of the State Council promulgated the Opinions on Further Stimulating the Consumption Potential of Culture and Tourism, which once again emphasised the promotion of the integration of the culture and tourism industry; in 2021, China's Ministry of Culture and Tourism issued the "14th Five-Year Plan for the Development of Culture and Tourism", which explicitly proposed to promote the integration of culture and tourism, emphasise the cultural connotation of tourism, use tourism to promote the dissemination of culture, and create a number of national demonstration zones for the integrated development of the cultural industry and tourism industry, and the issuance of these plans and policies has contributed to the achieve the integrated development of the culture and tourism industries provide solid support; in 2022, the 20th National Congress of the Party emphasised the need to stimulate the vitality of traditional culture and make it compatible with contemporary society. The integration of culture and tourism makes traditional and region-specific cultures known to the public and makes it possible to promote culture in the form of

widespread participation. At the same time, the integration of culture and tourism is an important means for the development of cultural industry and innovation of cultural products, and an important way to improve the quality of tourism, deepen tourists' understanding of history and culture, enhance cultural confidence, and promote the synergistic and high-quality development of culture and tourism.

Anhui Province, with its long history and unique culture, has rich tourism resources, in addition to the famous Huangshan Mountain and ancient villages, there are also scenic spots such as Tianzhu Mountain and Jiuhua Mountain, as well as many museums and other cultural venues. With its rich historical deposits, Anhui has formed unique cultural characteristics and possesses an innate advantage of cultural and tourism integration. Deeply promoting the integration of culture and tourism in Anhui Province and enhancing the popularity of Anhui culture is of great significance for the integrated development of the national culture and tourism industry.

2. Review of Literature

At present, most of the foreign academic research on the "integration of culture and tourism" is based on the study of "cultural tourism", which mainly includes the concept of cultural tourism, cultural tourism products and cultural resources tourism development mode and the impact of cultural tourism and other research content. American scholar Greg Richard (2011) elaborated the importance of creativity for the integration of culture and tourism, and put forward cultural and creative activities as a new path for the integration and development of culture and tourism, so as to realize the optimization and upgrading of the overall resources of culture and tourism [5]; Howard Hughe and

Danielle Allen (2005), taking Central and Eastern Europe as the main body of the research, pointed out that through the development of cultural tourism, not only can it promote the development of cultural tourism, but also the development of cultural tourism, which can help to promote the development of cultural tourism. development of cultural tourism can not only promote economic development, but also reshape the national image [6]; Stastna Milada et al. (2020) selected three Austrian villages as representatives to study the impact of cultural tourism on local rural development [7]. With China's increasing attention to the culture and tourism industry, domestic scholars have begun to start from the relationship between the cultural industry and the tourism industry to explore the development of culture and tourism integration in depth. Long Jingran (2021), Huang Xiaoyu (2020), Fan Zhou (2019) and other scholars have conducted research in the practice of integrated development of culture and tourism [8, 9]; Liu Yutang (2020), Zeng Yi (2020), and et al. have explored the important influence of the integration of culture and tourism on rural tourism and rural revitalization [10, 11]; Lijianmei (2016), using the scenic area of the Heavenly King City in Shandong Province as an example, has explored the role of cultural heritage on tourism brand enhancement in the context of culture and tourism integration [12]; Yu Ke (2022), Wen Ke (2020), Yue Fangmin (2020), Zhang Xin (2021), Fang Zhong (2018), and Zhang Yanfei (2013), et al. did innovative research on tourism development in different regions under the perspective of culture and tourism integration [13-17].

In summary, based on the results of the existing literature, it is found that there are fewer studies on the integration of culture and tourism industry in Anhui Province, therefore, in the context of the rapid development of tourism and culture

industry, combined with the actual situation of Anhui Province, we examine the development situation of the integration of culture and tourism industry in Anhui Province from the angle of quantitative research, and analyze the level of the comprehensive development of the culture industry and tourism industry as well as the degree of coordination between the two, and explore the feasible paths for the realization of the depth of the integration of culture and tourism. Feasible path, help to create a unique Anhui culture and tourism system, play the core role of culture.

3. Data Sources and Selection of Indicators

3.1. Data Sources

The data for this paper's study were obtained from the China Cultural Relics Statistical Yearbook (2012-2021), the China Tourism Statistical Yearbook (2012-2021) and the Anhui Statistical Yearbook (2012-2021).

3.2. Selection of Indicators

The selection of indicators is based on the following three criteria: (1) the measurement and coverage of the indicators to the industry or industry under study; (2) the degree of frequency of the indicators in the cultural industry and tourism industry; (3) the availability and historical continuity of the indicators to be studied. Based on the above criteria, this paper divides the primary indicators of the integrated development of culture and tourism into: economic benefits, the number of institutions and market size. The secondary indicators are shown in Table 1.

Table 1. Indicators for measuring the development of cultural and tourism industries

Categorization	Level 1 indicators	Secondary measurement indicators	Typology	Level 1 indicators	Secondary measurement indicators
Indicators for measuring cultural industries	Economic benefit	Institutional revenues in the cultural heritage sector (in thousands of dollars)	Tourism Industry Measurement Indicators	Economic benefit	Domestic tourism revenue of the province (billion yuan)
		Income from cultural market operators (\$ million)			Total foreign exchange earnings from tourism in the province (US\$ billion)
		Cultural Services Expenses (Billions of Yuan)			Operating income of travel agencies in the province (billion yuan)
		Revenue from performances by performing arts organizations (thousands of dollars)			Operating income of star-rated hotels in the province (billion yuan)
	Number of institutions	Number of public libraries (number)		Number of institutions	Number of travel agencies (homes)
		Institutions of mass culture (number)			Number of star-rated hotels (homes)
	Market size	Visits to museums (10,000)		Market size	Domestic tourist arrivals (billions)
		Number of performances in performing arts venues (10,000)			Number of overseas, Hong Kong, Macao and Taiwan travelers (10,000)

4. Research Methodology

4.1. Entropy Weight Method

As the measurement units and orders of magnitude of the indicators are different, the first step is to standardize the data and then obtain the weights of the corresponding indicators.

Step 1 Data standardization: Since there are differences in the scale, order of magnitude and positive and negative

indicators of the indicators, the positive indicators are standardized in accordance with formula (1), and the negative indicators are standardized in accordance with formula (2).

$$M_{ij} = \frac{X_{ij} - X_{jmin}}{X_{jmax} - X_{jmin}} (+) (i = 1, 2, 3 \dots m; j = 1, 2, 3 \dots, n) \quad (1)$$

$$M_{ij} = \frac{X_{jmax} - X_{ij}}{X_{jmax} - X_{jmin}} (-) (i = 1, 2, 3 \dots m; j = 1, 2, 3 \dots, n) \quad (2)$$

In this functional equation, X_{ij} represents the initial value

of the j th research indicator in the i th year; $X_{j\min}$ and $X_{j\max}$ represent the minimum and maximum values of the j th indicator in the data set of each year under study; M_{ij} takes the value of the interval of 0 to 1, which represents the degree of X_{ij} 's contribution to the industrial system. In addition, in order to avoid the situation that the indicator value is zero, the study refers to the relevant literature, can add 0.01 for each observation data with the original value of 0. This treatment makes the indicator with the original value of 0 no longer zero after standardization, and ensures that all the indicators are within the range of (0, 1) after standardization.

Step 2 Calculate the weight of the j th indicator in the i th year Y_{ij} : the entropy weight method is used to determine the weights of the coupled coordination degree model, and the weight of the j th indicator in the i th year in the overall proportion of the indicator is

$$Y_{ij} = M_{ij} / \sum_{j=1}^n M_{ij} \quad (3)$$

Step 3 Calculate the information entropy F_j for the j th indicator:

$$F_j = -(\ln m)^{-1} \sum_{j=1}^n (Y_{ij} \ln Y_{ij}) \quad (4)$$

There are $0 \leq F_j \leq 1$; when and only when $Y_{ij}=0$, make $Y_{ij} \times \ln Y_{ij}=0$, which is easy to calculate.

Step 4 Calculate the information entropy redundancy h_j :

$$h_j = 1 - E_j (j = 1, 2, 3 \dots, n) \quad (5)$$

Step 5 Calculate the indicator weights w_j :

$$w_j = h_j / \sum_{j=1}^n h_j (j = 1, 2, 3 \dots, n) \quad (6)$$

Where m is the total number of years to be studied and n is the total number of indicators selected for the respective measures of the cultural and tourism industries.

4.2. Integrated Assessment Method

The comprehensive evaluation method is used to measure the comprehensive index of cultural industry and tourism industry in Anhui Province. The total measurement formula of culture industry is $C(y)$:

$$C(y) = \sum_{j=1}^n w_j q_{ij} (i = 1, 2, 3 \dots, m; j = 1, 2, 3 \dots, n) \quad (7)$$

Where W_j denotes the weight of the measurement function accounted for by the j th indicator of the cultural industry; q_{ij} denotes the standardised value of the j th indicator of the cultural industry in the i th year; $C(y)$ denotes the overall measurement index of the cultural industry.

The total measurement formula of tourism industry is:

$$E(x) = \sum_{j=1}^n w_j p_{ij} (i = 1, 2, 3 \dots, m; j = 1, 2, 3 \dots, n) \quad (8)$$

Where, where $E(x)$ denotes the overall measurement index of the tourism industry; W_j denotes the weight of the measurement function accounted for by the j th indicator of the tourism industry; p_{ij} denotes the standardised value of the

j th indicator of the tourism industry in the i th year. When $E(x) > C(y)$ and $|E(x) - C(y)| > 0.02$, what is studied belongs to the lagging type of cultural development; when $E(x) < C(y)$ and $|E(x) - C(y)| > 0.02$, what is studied belongs to the lagging type of tourism development; and when $|E(x) - C(y)| \leq 0.02$, what is studied belongs to the type of simultaneous development of cultural and tourism industries.

4.3. Coupled Coordination Degree Model

(1) Coupling refers to the existence of interdependence, influence and constraints between different parts of the system, originating from physics [18-23]. In this paper, the cultural industry and tourism industry in Anhui Province are regarded as two independent systems, and the corresponding coupling degree model is established for measurement, which can effectively analyse the coordinated development between the two, and the calculation formula is:

$$M = 2 \sqrt{E(x) \cdot C(y) / (E(x) + C(y))^2} \quad (9)$$

Since there are only two major research projects on cultural and tourism industries in Anhui Province, the calculation formula can be simplified as follows:

$$M = \sqrt{E(x) \cdot C(y) / (E(x) + C(y))^2} \quad (10)$$

(2) The coupling coordination degree function can effectively analyse the mutual degree of coordination between the cultural industry and the tourism industry, drawing on the previous relevant studies, to determine the coupling coordination degree formula is as follows:

$$L = \alpha E(x) + \beta C(y) \quad (11)$$

In the formula, L represents the comprehensive coordination index of the integration of Anhui's cultural and tourism industries, which is a measure of the contribution of the overall development level of these two industries in the coupled coordination model; the cultural industry and tourism industry can be regarded as two equally important systems, so the coefficients to be determined (α and β) are both taken as 0.5.

$$D = \sqrt{M \cdot L} \quad (12)$$

In the above formula, M represents the degree of coupling, L represents the index of comprehensive coordinated development of cultural industry and tourism industry, and D represents the degree of coupling coordination.

(3) The "four-point" division method is adopted, and the stage of coupling and coordinated development of culture and tourism industry is divided into four coupling degree intervals, and the type of coupling and coordinated development can be divided into 10 grades according to different coupling coordination degrees, see Table 2.

Table 2. Coupling degree of culture and tourism industry and coupling coordination degree level division standard.

Coupling degree	Coupled developmental stages	Degree of coupling coordination	Coupling Coordination Level
0≤C≤0.3	Infancy	0.00~0.09	Extreme disorder
		0.10~0.19	Severe disorder
		0.20~0.29	Moderate disorder
0.3<C≤0.5	Break-in period	0.30~0.39	Mild disorder
		0.40~0.49	Proximity coordination
0.5<C≤0.8	Plateau	0.50~0.59	Sue for coordination
		0.60~0.69	Primary coordination
		0.70~0.79	Intermediate level coordination
0.8<C≤1	Advanced stage	0.80~0.89	Good coordination
		0.90~1.00	Quality coordination

4.4. Grey Correlation Analysis Model

Using grey correlation analysis (Table 3 shows the grey correlation level classification standard) to study the relationship between the subsystems of culture industry and tourism industry in Anhui Province, it can make the culture industry and tourism industry in Anhui Province form a benign development, promote the realization of culture and tourism industry to maximize the effect, and also make the relevant suggestions made more reasonable. The specific steps of grey correlation analysis are as follows:

(1) Select the parent sequence and sub-sequence of culture and tourism.

$$\text{Parent sequence: } \{x_1^{(0)}(m), x_2^{(0)}(m), \dots, x_n^{(0)}(m)\} \quad (12)$$

$$\text{Subsequence: } \{y_1^{(0)}(m), y_2^{(0)}(m), \dots, y_t^{(0)}(m)\} \quad (13)$$

Where m is the number of analysed regions, n and t are the number of original sequences of the parent and subsequence.

(2) The parent and subsequence are homogenised to obtain the absolute difference between each subsequence and the parent sequence.

$$\Delta g(m) = |y_i^{(0)}(m) - x_i^{(0)}(m)| \quad (14)$$

(3) Calculate the correlation coefficient.

$$\varepsilon_{i(p)} = \frac{\min_i \min_k |y^{(p)} - x_{i(p)}| + \alpha \min_i \min_k |y^{(p)} - x_{i(p)}|}{|y^{(p)} - x_{i(p)}| + \alpha \max_i \max_k |y^{(p)} - x_{i(p)}|} * \frac{x - \mu}{\sigma} \quad (15)$$

Where α is the resolution coefficient, default is 0.5.

(4) Calculate the correlation degree.

$$R = \frac{1}{q} \sum_{p=1}^q \varepsilon_i(p) \quad (16)$$

(5) Judge the correlation level according to the correlation R value, and the judgement criteria are shown in Table 3.

Table 3. Criteria for classification of grey correlation level of association

Range of values	level of association	Degree of integration
(0, 0.35]	Lower correlation	Lower level of integration
(0.35, 0.65]	Moderately related	Medium level of integration
(0.65, 0.85]	Higher correlation	Higher degree of integration
(0.85, 1]	Highly correlated	Highest level of integration

Table 4. Comprehensive development level of cultural and tourism industries

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cultural Industries Subsystem	0.0712	0.087	0.1741	0.211	0.3807	0.4636	0.6215	0.6909	0.8781	0.549
Tourism Industry Subsystem	0.2881	0.3329	0.3464	0.4092	0.5806	0.3944	0.5148	0.626	0.6876	0.192

5. Analysis of Results

5.1. Evaluation Results of the Comprehensive Development Level of Cultural Industry and Tourism Industry

Table 4 is the overall comprehensive development level of culture industry and tourism industry in Anhui Province from 2011 to 2020 as measured, and Figure 1 is the trend chart of the comprehensive development level of culture and tourism industry in Anhui Province.

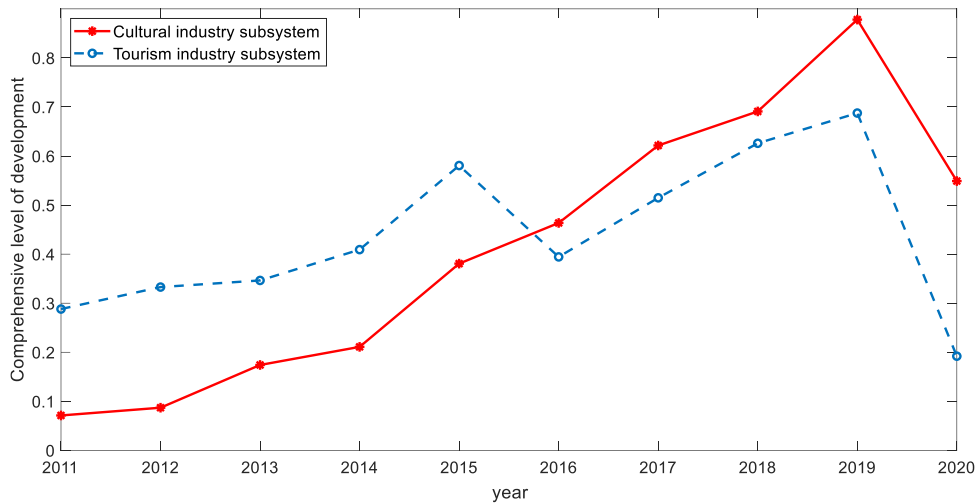


Figure 1. Trends in the comprehensive development level of cultural industry in Anhui Province

As can be seen from Table 4 and Figure 1, the comprehensive development level of Anhui province's cultural industry from 2011 to 2019 rose from 0.071 to 0.878, an overall increase of 12.3 times, indicating that the level of Anhui province's cultural industry has been a relatively large increase in the level of the cultural industry, due to the impact of the epidemic, the level of the comprehensive development of the cultural industry in 2020 has declined, but relative to 2011, there is still a 7.6-fold. From 2011 to 2019, the comprehensive development level of Anhui's tourism industry rose from 0.288 to 0.687, an increase of 2.3 times, indicating that the level of Anhui's tourism industry has also received better growth, and although the rate of increase in 2020 fluctuates, the level of development of the tourism industry is still holding a growth trend relative to that of 2011. Overall, the development of cultural industry in Anhui Province is faster than the tourism industry, the main reason is that the government departments in Anhui Province actively improve the national cultural soft power, pay attention to the development of the cultural industry to bring the effect, but also grasp the high-speed development of the tourism industry, especially in the "13th Five-Year Plan" "14th Five-Year Plan" period, Anhui Province focuses on the development of the tourism industry, especially in the "13th Five-Year Plan" period. During the period of "13th Five-Year Plan" and "14th Five-Year Plan", Anhui Province emphasises on supporting the integrated development of culture and tourism industry, which makes the culture industry and tourism industry get a large growth.

From Figure 1, the development of cultural industry and tourism industry in Anhui Province is in the same direction and at different speeds, and the growth rate of cultural industry development is significantly faster than that of tourism industry, and the comprehensive development level of the two overlapped between 2015 and 2016. During the period from 2011 to 2015, the development level of Anhui tourism industry is obviously higher than the development level of culture industry, and this period is also a key period for the development of tourism industry in Anhui Province, and the development of culture industry obviously exceeds the tourism industry after 2016, but the trend of the increase in the comprehensive development level of culture industry and tourism industry after 2016 shows a tiny gap, and the development level of the two show a the same speed trend, which also helps the coordinated development of the two.

5.2. Coupled Coordination Analysis

According to the above cultural industry and tourism industry coupling degree and coupling coordination degree model formula, using Anhui 2011-2020 cultural and tourism industry related data, indicators, firstly calculate the comprehensive development level value and standardised value, and in turn substitute into the coupling coordination degree model formula, respectively, the overall cultural industry in Anhui Province and the tourism industry coupling value M , the total comprehensive level value L , the value of the coupling coordination degree D , data analysis results are shown in Table 5.

Table 5. Coupling status of cultural industry and tourism industry in Anhui Province

Year	Cultural Industries Measurement index	Tourism Industry Measurement Index	Coupling degree	Degree of coupling coordination	Coupling Coordination Level	Culture and Tourism Synchronisation of integration and development
2011	0.071234921	0.288083693	0.398681511	0.267631919	Moderate disorder	Cultural lag type (i.e. lacking in culture)
2012	0.08702245	0.3329178	0.405318717	0.291727307	Moderate disorder	Cultural lag type (i.e. lacking in culture)
2013	0.174095264	0.346420978	0.471803637	0.35041508	Mild disorder	Cultural lag type (i.e. lacking in culture)
2014	0.210974271	0.409189721	0.473773275	0.383286528	Mild disorder	Cultural lag type (i.e. lacking in culture)
2015	0.380732678	0.580579506	0.489076145	0.484847841	Proximity coordination	Cultural lag type (i.e. lacking in culture)
2016	0.463640051	0.394371669	0.498367952	0.462388118	Proximity coordination	Tourism lag type
2017	0.621492888	0.514781725	0.497790195	0.531801825	Sue for coordination	Tourism lag type
2018	0.690904009	0.625954614	0.499391478	0.573423044	Sue for coordination	Tourism lag type
2019	0.878080864	0.687623722	0.496286953	0.623313227	Primary coordination	Tourism lag type
2020	0.548991922	0.192025685	0.438161396	0.402917677	Primary coordination	Tourism lag type

The numerical value of the measurement indexes of cultural industry and tourism industry indicates whether they are synchronised in the process of integration and development, and the smaller value indicates that their development is lagging behind that of the larger value, and they are unable to achieve synchronous development with the other industry. The coupling coordination degree of culture industry and tourism industry reflects the level of integration of the two, and the larger the value of the coupling coordination degree, the higher the level of integration of culture and tourism industry.

It is learnt from Table 5 that the coupling degree C of cultural industry and tourism industry in Anhui Province as a whole has developed to the level of 0.49, which is in the stage of friction, indicating that the development of the two can interact and influence each other. Combined with the coupling

coordination degree level interval division, overall, the coupling coordination degree of cultural industry and tourism industry in Anhui Province from 2011 to 2020 rose steadily, from 0.26 in 2011 to 0.62 in 2019, an increase of nearly two times, and the coupling coordination degree of 0.40 in 2020, fluctuating, but the degree of fluctuation due to epidemiological reasons. largely acceptable; in terms of specific stages, it is at a moderate level of dissonance in 2011-2012, reaches a mild level of dissonance in 2013 and continues until 2014, reaches a near coupling coordination level in 2015-2016, reaches a Barely coupled coordination level, and in 2019, it even reached the primary coordination state, indicating that the level of coordinated development of cultural industry and tourism industry in Anhui Province is getting higher and higher, and the specific development trend is shown by Figure 2 and Figure 3.

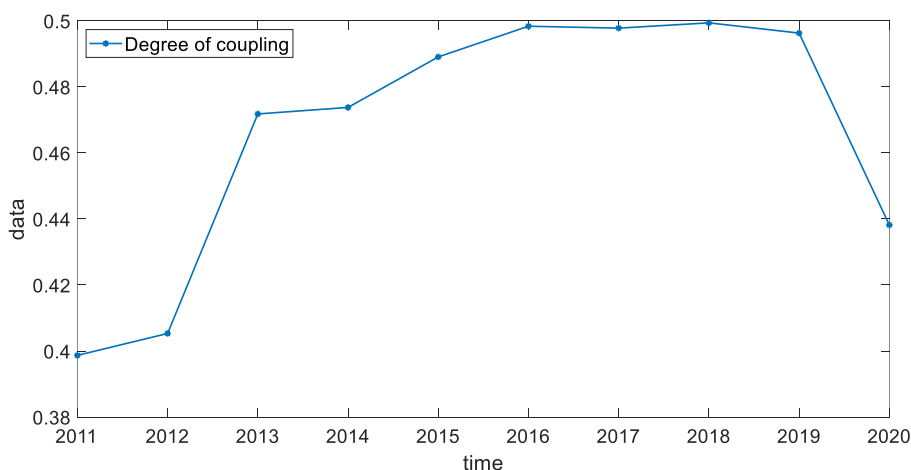


Figure 2. Coupling degree of cultural tourism industry in Anhui Province

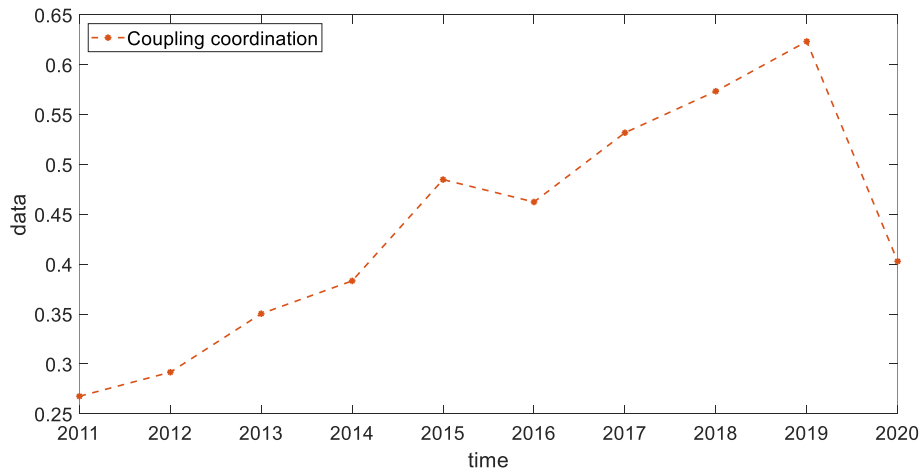


Figure 3. Coupling and coordination degree of cultural tourism industry in Anhui Province

5.3. Gray Correlation Analysis of Culture and Tourism Industry

When exploring the interaction between the cultural industry and the tourism industry, the correlation between the indicators within the system cannot be ignored. Given that the development of the industry is influenced by multiple factors, which are extensive and complex, and the contribution of different levels of industrial elements to the overall development is significantly different, leading to the difference in the effectiveness of the influencing factors. At the same time, relying solely on the analysis of coupling coordination degree is difficult to comprehensively capture the intrinsic connection between the elements within the industrial system, and it is also impossible to deeply reveal how a single industrial element acts independently on the coordinated development law of the whole industrial system. Therefore, in order to more accurately assess and understand the specific contribution of individual indicators to the coupling coordination degree of the cultural industry and the

tourism industry in the process of their integration, it is necessary to carry out an in-depth analysis to clearly identify the intrinsic connection between the indicators within each industrial system and the coupling coordination degree of culture and tourism. This study aims to reflect, through quantifying the correlation between the indicators, how the elements of individual industrial systems promote or constrain the coordination between the two industries of culture and tourism, so as to provide a scientific basis for realizing a more efficient and sustainable integrated development of culture and tourism.

(1) Taking the cultural industry subsystem as the mother sequence

Taking the cultural economic benefits, the number of cultural institutions and the cultural market scale as the mother sequence, respectively, exploring the relationship between the tourism economic benefits, the number of tourism institutions and the tourism market scale and the mother sequence, and obtaining the correlation degree through the grey correlation analysis as shown in Fig. 4.

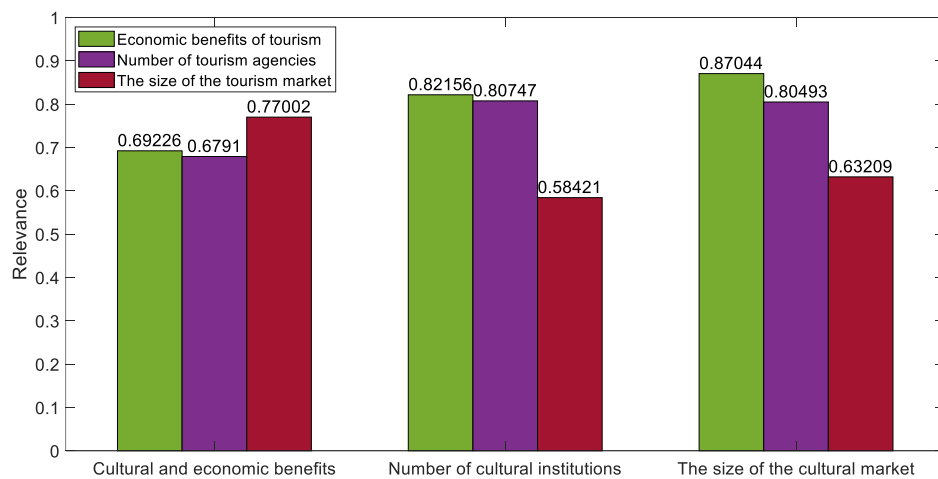


Figure 4. Degree of correlation with the cultural industry subsystem as the parent series

From Figure 4, it can be seen that the tourism economic benefits have the highest degree of correlation with the cultural market size, the number of tourism institutions has the highest degree of correlation with the number of cultural institutions, and the tourism market size has the highest degree of correlation with the cultural economic benefits. The specific performance is that the expansion of tourism market scale can effectively increase the cultural industry benefits,

the increase of tourism economic income has a certain influence on the expansion of the cultural market scale, and the resources of tourism scenic spots, tourism enterprise resources, etc. have a certain correlation to the increase of the number of cultural industry institutions.

(2) Take the tourism industry subsystem as the mother sequence

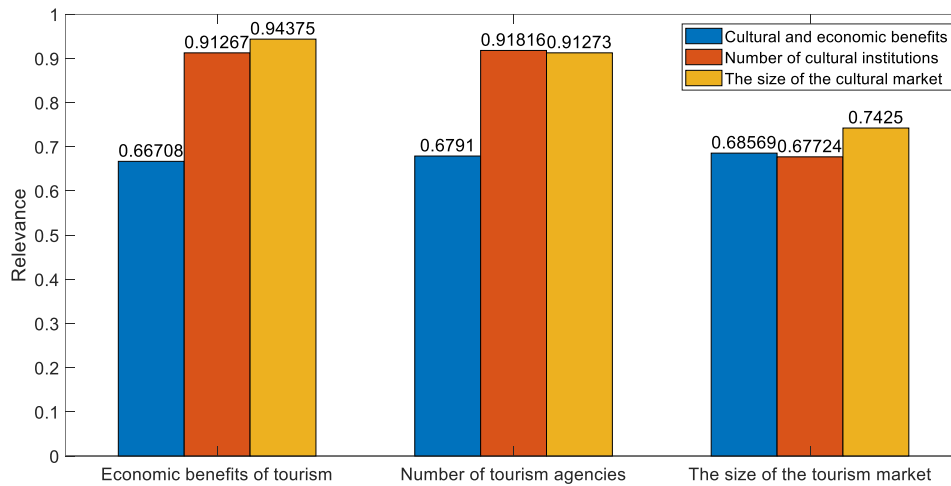


Figure 5. Correlation with tourism industry subsystem as parent series

As can be seen from Figure 5, the correlation between cultural economic benefits and tourism market size is the highest, the correlation between the number of cultural institutions and the number of tourism institutions is the highest, and the correlation between cultural market size and tourism economic benefits is the highest. The reason for this is that the social influence of the cultural industry (the economic benefits brought by the flow of people in public libraries and the number of visits to museums) has a certain positive effect on promoting the construction of tourism venues and tourism-related transportation (infrastructure construction has a certain positive effect on market agglomeration); the construction of cultural venues and humanities resources may accelerate the construction of tourism scenic spots and tourism enterprises; and the resources of the cultural industry have a corresponding effect on the development of the tourism economy also has a corresponding positive effect.

6. Conclusions and Policy Recommendations

6.1. Conclude

This paper quantitatively analyzes the development of cultural industry and tourism industry in Anhui Province, measures the development level of cultural and tourism industry in Anhui Province based on the entropy value method, and evaluates the degree of coupling and coupling coordination between the development of cultural industry and tourism industry as well as the degree of correlation within the two systems of cultural industry and tourism industry by combining the entropy value method and the coupling coordination model and the grey correlation analysis, and draws the following conclusions: (1) The growth rate of cultural industry in Anhui Province is higher than that of tourism industry. The growth rate of culture industry is higher than that of tourism industry, and it has changed from the lagging development of culture industry in 2011-2015 to the lagging development of tourism industry since 2015. The development of the cultural industry is due to the fact that Anhui Province has repeatedly issued relevant cultural propaganda documents and strongly supported the development of the cultural industry, which should continue to deeply excavate the connotation of Anhui culture and reflect the uniqueness of the culture of Anhui Province; (2) the culture and tourism industry in Anhui Province is in a state of primary coupling and coordinated development, and the

degree of coupling and coordination reaches the standard of primary coordination in 2019, and then due to the impact of the epidemic in 2020, the degree of coupling of the two has declined, in which the Tourism industry development lags behind, and the mismatch between the development of the cultural industry, limiting the coupling coordination degree, increase tourism investment, strengthen infrastructure construction and improve the service system, promote the comprehensive development of the tourism industry so as to realize the synergistic effect of the two industries. (3) culture and tourism industry each single indicator on the two coupling coordination degree has different contributions, individual industry system elements can promote or constrain the coordination between culture and tourism two major industries, can be more efficient, sustainable cultural tourism integration and development to provide a scientific basis.

6.2. Policy Recommendations

From the above research results, it can be seen that the coupling and coordination of culture and tourism industry in Anhui Province needs to be improved, and the quality of culture and tourism integration needs to be improved. In order to promote the development of deep integration of culture and tourism industry in Anhui Province, this paper puts forward the following suggestions for reference.

(1) Adhere to the integrated development and enrich the supply of cultural tourism products. Dig deep into the cultural connotation of tourism resources, innovation to create competitive and influential landscape and line products, appropriate development of art museums, cultural centers, science and technology museums, museums and other existing cultural venues and cultural facilities, and add the characteristics of tourism elements, research and development of new tourism products. Implementing the strategic model of "culture and tourism +", promoting the integrated development of "culture and tourism + recreation", "culture and tourism + specialties", "culture and tourism + sports" and so on. "And other integrated development, to realize the cross-border transformation and upgrading of the culture and tourism industry, and promote the quality and expansion of consumption in the culture and tourism industry. Integrate wetlands, hot springs, forests, special cultural towns, traditional Chinese medicine and other recreational tourism resources in Anhui province, vigorously cultivate provincial and national recreational tourism demonstration bases, and create a recreational tourism + medical care + health as one of the recreational tourism industry clusters; create a

"recreational tourism + specialties" industry clusters in a piece of the area, and make use of the Huangshan Maofeng, WUWEI plate duck, HUAYUAN Pomegranate, Wouwei duck, Huaiyuan pomegranate, Taiping Monkey Kui, Huaining cake, Tongling sugar and other cultural specialties, vigorously develop the production of specialties, specialties, sightseeing, leisure and vacation, participate in the experience of the creative specialties in the exhibition; the implementation of sports tourism boutique demonstration project, Anhui Qianshan (sports + culture + tourism skateboarding event) as a model pioneer, so that the sports events for tourism development to bring new growth points, for the whole region tourism to add color, to create a number of influential sports tourism. Make every effort to create a number of influential sports tourism boutique routes, high-quality events as well as national sports tourism demonstration bases.

(2) Playing up comparative advantages and improving the market value of cultural and tourism products. According to the cultural industry and tourism industry in anhui province empirical analysis can be seen, anhui province culture and tourism industry coupled with the degree of coordinated development there is a large imbalance; in order to make the cultural industry and tourism industry in anhui province synchronous development, high quality and coordination, we should adhere to the market demand oriented. Focus on creating the pen, ink, paper and inkstone as the representative of the emblem of the famous products, play pen, ink, paper and inkstone as the representative of the unique culture and tourism products in anhui market value, in order to "shape the brand" as a means to drive the development of the region; and cities and cities, districts and districts need to strengthen the culture and tourism industry development of high-quality coordination, exchanges and collaboration, through the excavation of the unique outstanding cultural and tourism industry. Resources, such as Mount Huangshan, Mount Tianzhu and Mount Langya can be taken "order training + on-site immersion red cultural experience" tourism project, in order to deepen the unique connotation of cultural and tourism products, dissemination of the characteristics of the red cultural resources, and further improve the market value of Anhui culture and tourism boutique product market value and its tourists' consumption demand.

(3) Strengthen publicity and promotion, enhance the brand effect of culture and tourism. Set up the characteristic tourism brand image of Anhui Province, introduce tourism slogans and unified logo of tourism products, and build a detailed complete image recognition system for the whole region tourism destination. Insist on shaping tourism with culture and manifesting culture with tourism, promote the deep integration and development of culture and tourism, accelerate the high-quality development of the culture and tourism industry, improve the supply of high-quality culture and tourism products, enhance the brand of Anhui culture and tourism, and strive to create a national cultural night tourism consumption cluster. On the social platform, on the one hand, focus on the establishment of new media platforms such as microblogging, Jittery, WeChat, Xiaohongshu and other domestic marketing matrix, set up anhui culture and tourism account; on the other hand, the establishment of overseas marketing matrix mainly based on Facebook, Instagram, YouTube, to promote the "beautiful anhui" overseas marketing action, elaborate overseas communication matrix. On the other hand, it establishes an overseas marketing matrix

mainly based on Facebook, Instagram and YouTube, promotes the overseas marketing action of "Beautiful Anhui", carefully creates an overseas communication matrix, and builds a network precise marketing system. We will publicize Anhui culture, food and beautiful scenery, carry out bundled marketing, make Anhui poetry, Anhui books, Anhui paintings, Anhui tea and Anhui opera famous at home and abroad, and hold the Anhui International Culture and Tourism Festival in high quality; jointly launch market-oriented boutique tourism routes and brands in the Yangtze River Delta with Shanghai, Suzhou and Zhejiang; and make use of "Beautiful China" and "Beautiful China" to promote the "Beautiful Anhui" overseas marketing action. "Beautiful China" and other promotional platforms, deepen cultural and tourism exchanges and cooperation between Hong Kong, Macao and Taiwan; around the whole region of Anhui Province tourism, the integration of Anhui municipal resources, planning Anhui's overall marketing program, the implementation of the integration of the provincial region to promote, carry out the "Greater Huangshan" (South Anhui) global promotion, bring tourists in, bring Anhui culture and tourism to the region, and promote the culture and tourism of Anhui. Introduce tourists to the city, spread the reputation of Anhui culture and tourism, and expand the market of tourists in and out of the province.

(4) Enhance the level of cultural and tourism services and cultivate new cultural and tourism talents. Service quality is the intrinsic demand of culture and tourism service industry, which directly affects the actual experience of the majority of culture and tourism consumers, and the quality service can enhance the satisfaction degree of tourists to the tourism destination; culture and tourism talents are the important support to enhance the service quality. Due to economic reasons, Anhui Province, there are a large number of cultural and tourism industry high-quality talent outflow problem, which leads to the talent reserves and structure cannot meet the demand of Anhui cultural and tourism integration development. Anhui province should make full use of the opportunities brought by the development of culture and tourism industry, accelerate the cultivation of new culture and tourism science and technology talents, and give full play to the resource advantages of universities and high-tech enterprises. Based on this, the development of culture and tourism industry to provide high-level talent support, so that the advantages of these college and university talents become a strong backup force for the development of culture and tourism industry in Anhui Province. At the same time, we should vigorously promote the development of vocational education in culture and tourism, actively promote the integration of industry and education, strengthen the cooperation between schools and enterprises, cultivate multi-talented talents suitable for the requirements of the integrated development of culture and tourism in Anhui Province, and strengthen the training of service skills and management ability of employees engaged in the culture and tourism industry in Anhui Province. In addition, it should also relax the policy of introducing tourism talents, and more vividly publicize the "Anhui Answer Sheet", "Anhui Main Stage" and "Anhui Culture".

(5) Increase policy support, help the development of culture and tourism industry. The integrated development of culture and tourism industry in Anhui relies to a large extent on the guidance and support of the government. The government supports the development of culture and tourism industry by clarifying industrial development goals and

solving problems in the development process. The government should pay great attention to the development of the tourism industry and the cultural industry, put forward the enhanced strategic goal of establishing a strong tourism province in Anhui Province, and formulate relevant policies and measures to support the development of new cultural and tourism industries and new industries, increase the financial support for the cultural and tourism industries, take tourism as an important pillar industry of the province's economy, strengthen the integration and planning of key cultural and tourism resources, and continue to push forward the development of the province's tourism industry.

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