

Promoting Cultural Industry Management in the Context of a Green Ecological Environment

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ABSTRACT

The green cultural industry is a key driving force for economic transformation and the upgrading of industrial structures. However, to achieve its development while protecting the environment, its influencing factors and the interactive relationship between the economy and the environment must be considered. This paper examines the environmental promotion effect of the green cultural industry by analyzing the interaction mechanism among these three elements, using the entropy method and coupling coordination model. The results show that the green cultural industry can develop cultural resources in line with national cultural characteristics, foster cultural innovation, promote economic growth, and reduce ecological resource consumption. At the same time, economic improvement enhances infrastructure, provides services to support the cultural industry, strengthens environmental protection, and improves ecological carrying capacity, offering greater resource support for cultural industry development.

KEYWORDS

Cultural Industry, Environmental Role, Green Concept, Green Ecology, Industrial Management

PROMOTING CULTURAL INDUSTRY MANAGEMENT IN THE CONTEXT OF A GREEN ECOLOGICAL ENVIRONMENT

The ecological environment and natural resources are essential foundations for the development of human society. However, societal progress has not only accelerated the depletion of natural resources but has also disrupted the harmonious development of the green ecological environment. As a result, green development has become an inevitable global trend (Khezrimotlagh et al., 2019). While previous models of social development consumed large amounts of resources and generated significant environmental pollution in exchange for relatively low economic value and production efficiency, green development offers a multifaceted approach. It emphasizes the integration of green ecology and environmental sustainability as the basis for efficient, coordinated development. This model promotes the sustainable and harmonious growth of industry, economy, and the environment through their positive mutual influence (Wang et al., 2020b).

The cultural industry leverages cultural resources in combination with other products or industries to provide cultural services to consumers through innovation. It serves as a driving force for the transformation of extensive industrial construction and plays a crucial role in upgrading the traditional economic model to a green, high-quality economy (Altenburg & Rodrik, 2017). Cultural resources are the core of cultural industry development and innovation, capable of being utilized and exploited

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multiple times through technology and low energy consumption (Zhang et al., 2022). The development of cultural industries has a relatively low demand for natural resources, significantly reducing the constraints of natural resource availability on growth. Additionally, its production processes substantially cut down on resource waste and pollutant generation, minimizing the environmental impact while delivering cultural products and services to consumers (Li et al., 2015).

As a result, the cultural industry has maintained its image as green in the public's minds and is often considered one of the representatives of green industries. The green cultural sector is rooted in green ecology, with culture as its core and the economy as its foundation. It promotes harmony between humans and nature and strives for the coordinated development of ecology, culture, and economy. It emphasizes the sustainability of cultural industry development. Only truly green industries are sustainable, and only genuinely sustainable industries can be considered green. Therefore, green and sustainable development are inherently aligned and mutually consistent for the cultural sector.

In reality, however, too much attention is placed on the cultural industry and value chain, while the ecological relationship between them, the green environment, and economic growth is often overlooked. Behind the rapid development lies a crude development model that contradicts the principles of a green ecological environment, severely disrupting the coordination among these three elements and limiting the potential for sustainable development.

Guided by the concept of a green ecological environment, it can promote the green development of the primary, secondary, and tertiary industries, indirectly optimizing the industrial structure and advancing the transformation of the economic development model (Li & Lin, 2017). Similarly, the development of the green cultural industry drives the construction of a green ecological environment and civilization, which is crucial in mitigating the conflict between the economy and the environment. Its fundamental approach is through the construction of ecological civilization, with green ecological culture serving as the essential foundation and framework (Marinelli, 2018). Therefore, it is an inevitable trend for the cultural industry to achieve its development by integrating management with the principles of a green ecological environment.

The coupling concept is widely applied in ecology, geography, agriculture, and other fields. The study of system relationships describes the mutual influence, interaction, and even unity between systems or elements. When the internal elements of a system are well-coordinated, it is considered benign coupling. Conversely, when these elements conflict with or hinder each other, it is called vicious coupling. The degree of coupling is typically used to explain the level of interaction between systems or elements. Coordination refers to the harmonious and valuable relationships between systems or system elements, allowing multiple systems or elements to thrive. A supporting coordination system is a tool used to evaluate sustainable development (Tang, 2015; Wan et al., 2020). Coupling coordination describes the interaction and influence that occur when two or more systems are connected in some way. Over time, the relationship between systems can evolve, transitioning from disharmony to coordination (Liu et al., 2020).

This paper examines the mechanism of interaction among the cultural industry, economic growth, and environmental resources. Using the entropy method, an evaluation model for the degree of coupling coordination between the cultural industry and the environment is constructed. By studying the environmental effects of green cultural industry management in selected cities, the relationships among these factors are identified. Based on the research findings, suggestions are provided to foster the mutual promotion and development of the green cultural industry, economic growth, and environmental resources, offering a foundation for formulating development strategies. The purpose of this study is to supplement the existing literature and provide a reference for the management and development of the green cultural industry.

LITERATURE REVIEW

The concept of “cultural industries” can be traced back to the 1950s, when the book *Mon Dialectic* highlighted the nature of cultural consumption in the industrial production of communication and consumption services for the masses, which can be produced in batches and procedures according to a design structure (Wang et al., 2020a). In later studies, some cultural theorists argued that the book’s description of the cultural industry was too narrow, as it encompasses more than just culture; it involves the entire production process, in which the working class can also participate (Caiwu & Nianqu, 2019). With societal and economic development, some scholars now argue that contemporary culture is the product of cultural transformation, with its connotation having changed significantly. The products created in cultural industries now carry both cultural and commercial value, reflecting a new relationship between culture and the economy (Sánchez-Sánchez et al., 2020). In the early 21st century, UNESCO defined cultural industries, emphasizing their industrialized production standards, the attributes of goods and services, and their association with a range of related products and service activities (Park et al., 2012).

In the early stages of cultural industry research, many scholars approached the topic from a cultural perspective, integrating sociology-related theories. As research deepened, the relationship between cultural industries and economic development became more prominent, with the focus gradually shifting toward economics. This expanded the research scope from the structure and layout of cultural industries to their agglomeration competitiveness, relevance, and development strategies. At the same time, differences in economic development and local conditions led to variations in classification and research methods across regions, with research results often reflecting local cultural characteristics (Zhang, 2019).

Some scholars have noted the widespread economic interconnections between different industries, arguing that changes in cultural industries inevitably have complex effects on other sectors (Liu, 2021). Japanese scholars, for example, have identified cultural industries as having significant demand and development potential in Japan, noting that innovation in cultural resources not only increases profit margins but also affects other non-cultural industries (Wang & Wang, 2023). In Korea, scholars analyzing the correlation between cultural industries and economic growth using macroeconomic theory concluded that the two are positively correlated (Yang & Gong, 2021). Others have argued that the cultural industry is dynamic and capable of integrating with other technologies, services, and products to create new industrial services. They suggest that in the future, cultural industries will likely merge with e-commerce and other sectors, expanding their scope and influence (Zhang & Wu, 2021).

With the rise of Internet technology, national characteristics, cultural innovation, and green ecological civilization have become key competitive advantages for many countries. Scholars have proposed that cultural industry development should emphasize national characteristics and leverage the natural benefits of cultural heritage to promote further process (Martínez-Pérez et al., 2019). Figure 1 illustrates various new cultural industry projects.

Domestic research on the Chinese cultural industry began relatively late, with systematic research and theoretical exploration only starting in the 1990s. However, after entering the 21st century, the domestic economy developed rapidly, and the economic structure gradually shifted from its earlier, more inefficient form. The concept of green development within the cultural industry has played a vital role in promoting this transformation, significantly influencing social progress and the development of other sectors (Zhang, 2018).

At the same time, the public’s concern for national culture and desire for cultural self-confidence drive the cultural industries to continue innovating and expanding their economic impact, further highlighting their importance in the national economy (Li & Ju, 2020). Cultural innovation generally refers to the innovation of cultural content, forms, and means of communication. It is closely linked with theoretical, institutional, scientific, and technological innovation, forming an organic whole that contributes to building an innovative nation. As culture’s economic, social, and political functions

Figure 1. A variety of new cultural industry projects

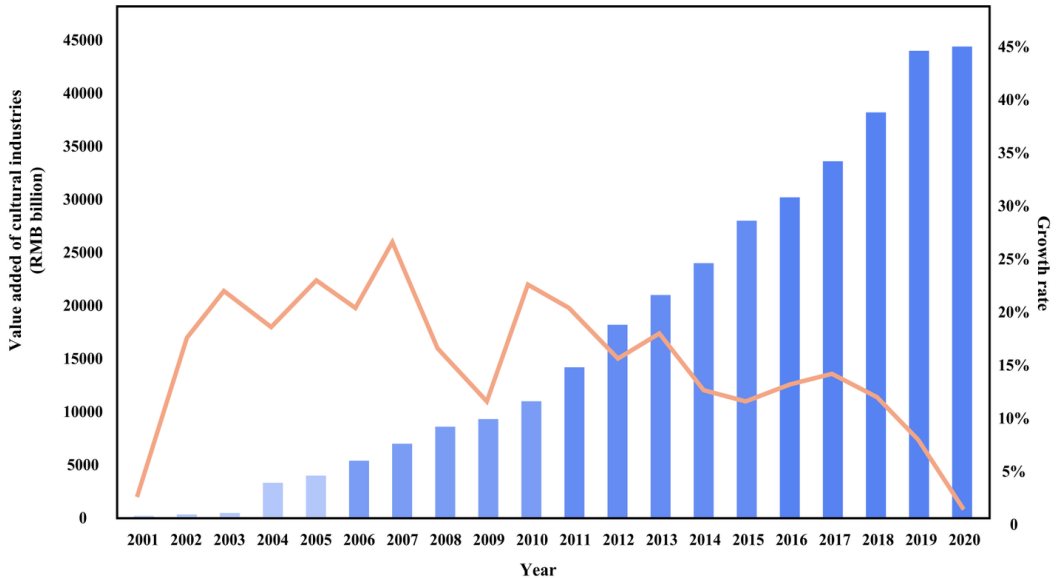


expand, culture has become a critical factor in a country's core competence. By innovating cultural content and forms, various excellent cultural works that reflect national characteristics can be created. A cultural innovation management system and industry pattern can emerge through reforms in cultural systems and mechanisms, cultivating a cultural innovation market and shaping its key players. In addition, innovation in cultural communication methods will enhance cultural communication technologies, channels, and systems.

As shown in Figure 2, the domestic cultural industry's business income from 2000 to 2021 demonstrates substantial growth. The data indicate that the value of the domestic cultural industry increased substantially after 2004. Despite the impact of the pandemic, the industry still maintained positive growth. In terms of year-on-year growth rates, the cultural industry experienced rapid and fluctuating growth until 2012. After 2013, although the growth rate declined, the overall scale had reached a substantial level, and the pandemic further slowed its growth rate. Nevertheless, the domestic cultural industry continues to expand, with its influence on the national economy and other industries becoming increasingly significant. The environmental promotion effect of the green cultural industry is particularly important. This refers to the role of cultural industries in promoting positive and sustainable development through the interaction between green cultural industries and environmental resources. Optimizing cultural industry management and establishing a robust green cultural industry ecosystem are crucial for promoting the sustainable development of the industry.

However, there are also challenges in the development of the green cultural industry. Some scholars point out that certain regions unilaterally pursue the economic value of cultural industries, neglecting their own cultural characteristics. In doing so, they blindly follow trends in cultural industry

Figure 2. Statistical results of the growth value of the domestic cultural industry



development, leading to environmental degradation and non-green development (Wang et al., 2023). Other scholars highlight the close connection between cultural and ecological resources, noting their scarcity and fragility. Inappropriate cultural industry development accelerates the depletion of resources such as natural cultural heritage, sometimes causing irreversible damage (Zhou et al., 2020). Therefore, the previous approach to cultural industry development fails to meet the demands of green development, and a sound green cultural industry management system should be constructed based on the concept of a green ecological environment.

MATERIALS AND METHODS

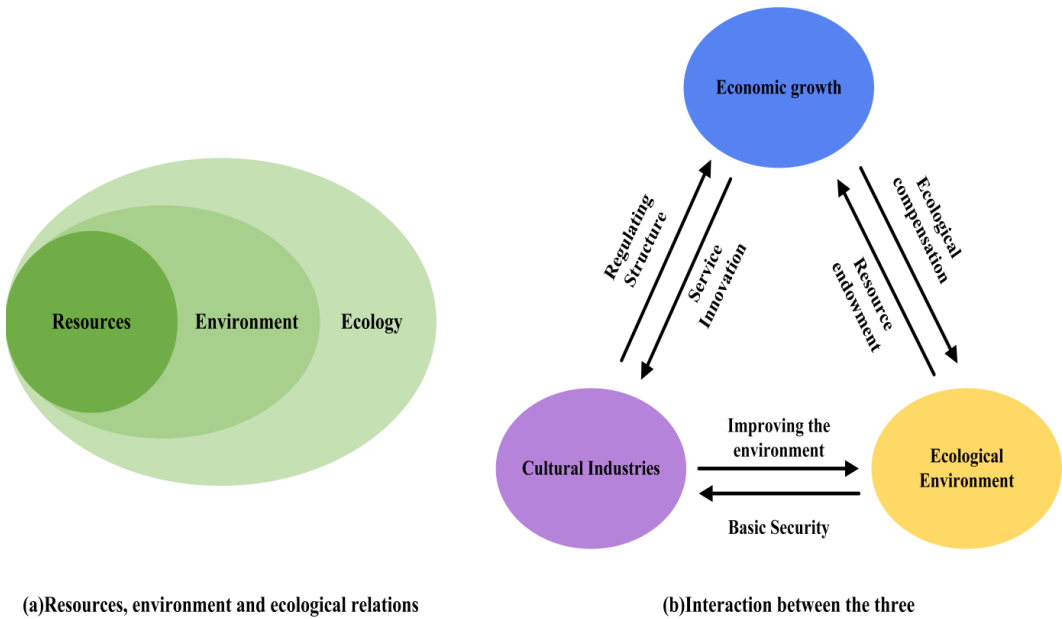
Data Sources

The data for this study primarily come from the *China Tourism Statistics Yearbook* (2010–2019), the *China Regional Economic Statistics Yearbook*, the *China Environmental Statistics Yearbook*, and the statistical yearbooks of western provinces and cities.

Model of the Relationship Between Cultural Industry, Economy, and Environment Based on the Concept of Green Ecology

Different industries form the foundation of economic development. Economic progress is inseparable from ecological and environmental resources, and the protection of the environment requires industrial and economic support. Thus, the three—industry, economy, and environment—are not independent but rather influence and interact with each other, as shown in Figure 3. The most obvious impact of the cultural industry's expansion on the economy is its promotion of economic growth. The integration of cultural resources with various industries facilitates the optimization and transformation of other industrial structures (Zhu & Zhang, 2021). This optimization accelerates high-quality economic development, a process that requires not only improvements to the regional infrastructure but also the support of cultural soft power and ecological sustainability. The ecological environment serves not only as a resource base for economic and industrial growth but also as a limiting factor that determines their development. A blind pursuit of economic benefits places excessive

Figure 3. Diagram of the interaction and roles of the three elements

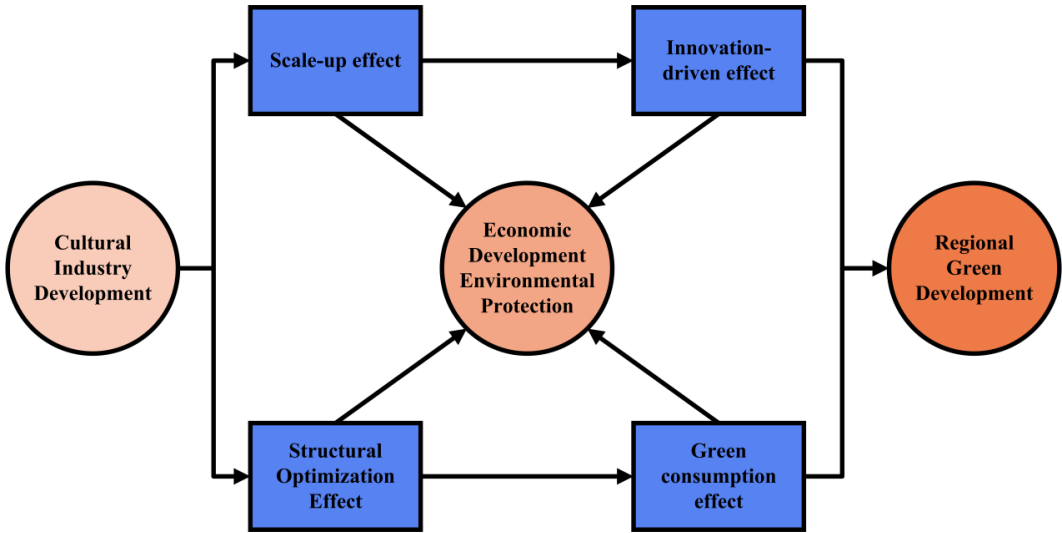


pressure on the environment, depleting resources, damaging ecological balance, worsening living conditions, reducing happiness, and ultimately constraining economic growth.

If economic growth is accompanied by financial support for ecological protection and restoration, improvements in green technology, development of new green energy, and reduction in natural resource consumption, alongside enhancements in cultural industry infrastructure and services, then both the ecological environment and the cultural industry will develop steadily. The cultural industry fosters industrial structure upgrading, reduces reliance on rough growth models, minimizes adverse environmental impacts, and increases attention to environmental and resource issues. The expansion of the cultural industry creates more jobs, boosts cultural consumption, stimulates economic growth, and indirectly enhances financial support for the ecological environment. A protected ecological environment, in turn, provides essential resources for economic and industrial growth, strengthening their development. Conversely, a thriving ecological environment fosters cultural industry growth, promotes cultural innovation, and boosts cultural consumption. This close connection between the three—economy, environment, and cultural industry—demonstrates their mutual influence, as illustrated in Figure 4. Achieving common, harmonious, and sustainable development requires that all three elements engage in a virtuous cycle.

To sum up, the development of the cultural industry should fully consider its impact on the economy and environment. It should integrate the concept of a green ecological environment and green technology, promote cultural industry development, avoid blindly following trends, and actively explore and utilize national cultural resources for innovation. The cultural industry represents an opportunity to transition from a rough economy to a more efficient one (Rabie, 2013). Economic transformation and reduced resource consumption contribute to positive environmental development and achieving green development goals.

Figure 4. Schematic diagram of the interaction mechanism of the three elements



Entropy Value-Based Model for Assessing the Coordination of Cultural Industry and Environmental Coupling

Based on the interrelationship model of the cultural industry, economy, and environment, these can be viewed as three subsystems within an ecosystem. Each subsystem can operate independently and influence the others, and the degree of coordination among them reflects their interactive effects. This paper combines the entropy value method and a coupled scheduling model to construct an assessment model for the coordination degree of the cultural industry and environmental system. This paper first identifies the relevant evaluation indices based on research findings and expert analysis and then determines the index weights using the entropy value method.

Specifically, the entropy method from information theory is used in conjunction with a judgment matrix composed of evaluation index values to determine the weight of each index. The entropy method is widely used in socio-economic evaluations to measure uncertainty. It determines index weights based on the information provided by the observed values of each index. The principle of the entropy method is to assess the dispersion of an index through its entropy value. A smaller entropy value indicates a higher order of the index, greater dispersion, and less uncertainty. Conversely, a larger entropy value signifies greater uncertainty. The entropy method helps evaluate the order and influence of system indexes. By constructing a judgment matrix using the entropy method, the calculation of index weights is less subject to human interference, and it addresses the issue of information overlap among multiple index variables in the evaluation process.

The weights of indicators can significantly affect the final analysis results. To avoid excessive subjectivity in weight determination, a data matrix with high objectivity and authenticity is obtained using Equation 1, with the number of indicators denoted as i .

$$M_{ab} = \left(m_{ab} \right)_{i \times j} = \begin{pmatrix} m_{11} & m_{12} & \cdots & m_{1j} \\ m_{21} & m_{22} & \cdots & m_{2j} \\ m_{i1} & m_{i2} & \cdots & m_{ij} \end{pmatrix} \quad (1)$$

The evaluation metric with the sequence number b is denoted as M_{ab} , and the data set with the sequence number is $a = 1, 2, \dots, i$ and $b = 1, 2, \dots, j$.

Values and results of unsettled operations on indicators that are directly proportional are recorded as positive indicators, while those that are inversely proportional are recorded as inverse indicators, as shown in Equations 2 and 3.

$$m'_{ab} = \frac{m_{ab} - \min m_b}{\max m_b - \min m_b} \quad (2)$$

$$m'_{ab} = \frac{\max m_b - m_{ab}}{\max m_b - \min m_b} \quad (3)$$

The normalized matrix is as follows:

$$M'_{ab} = \left(m'_{ab} \right)_{i \times j} = \begin{pmatrix} m'_{11} & m'_{12} & \dots & m'_{1j} \\ m'_{21} & m'_{22} & \dots & m'_{2j} \\ m'_{i1} & m'_{i2} & \dots & m'_{ij} \end{pmatrix} \quad (4)$$

The weights are calculated as shown in Equation 5.

$$\omega_b = \frac{h_b}{\sum_{a=1}^i h_b} \quad (5)$$

The indicator variability is systematically expressed as h_b .

Let the number of subsystems in the whole system be $v_m (m = 1, 2, \dots, i)$, $v_n (n = 1, 2, \dots, j)$, $j \leq 2$, and their interaction coupling degree is calculated as shown in Equation 6.

$$H_j = j \left\{ (v_1 \times v_2 \times \dots \times v_j) / (v_1 \times v_2 \times \dots \times v_j)^j \right\}^{\frac{1}{j}} \quad (6)$$

Also, $j = 2$ when the model is as shown in Equation 7.

$$H_2 = 2 \left\{ (v_1 \times v_2) / (v_1 \times v_2)^2 \right\}^{\frac{1}{2}} \quad (7)$$

The above equation can reflect the intensity of interaction between the two subsystems.

Let the expression functions of cultural industries and environment be $f_1(m, t)$, $f_2(n, t)$, respectively, where t is a description of time, and the degree of coordination between the two is assessed as shown in Equation 8.

$$f_1(m, t) = \sum_{b=1}^j \omega_b S_{tb} \quad (8)$$

The value obtained after normalization of the index in the formula is expressed as S_{tb} . The level of coordination between the two is shown in Equation 9.

$$L = \frac{2 \sqrt{f_1(m, t) \times f_2(n, t)}}{f_1(m, t) + f_2(n, t)} \quad (9)$$

Table 1. Evaluation criteria for coupling coordination degree of cultural industry and environment

Coupling degree (H)	Coupling level	Coupling and coordination degree (T)	Coupling and coordination level
$0 < H \leq 0.3$	Low-level coupling stage	0–0.4	Low coordination coupling
$0.3 < H \leq 0.5$	Antagonistic stage	0.4–0.6	Moderately coordinated coupling
$0.5 < H \leq 0.8$	Run-in stage	0.6–0.8	Highly coordinated coupling
$0.8 < H \leq 1$	High-level coupling stage	0.8–1.0	Extremely coordinated coupling

Theoretically, $L = H_2$. In practice, the value obtained according to Equation 9 is lower than H_2 . To improve the accuracy of the assessment, this value is used as the basis for reconstructing the coordination model. After calculating the coupling degree H and the coordination degree L , the coupling coordination degree T can be determined, as shown in Equations 10 and 11.

$$T = (L \times Y)^{\frac{1}{2}} \tag{10}$$

$$Y = \lambda f_1(m, t) + n f_2(m, t) \tag{11}$$

Y is the comprehensive coordination index of the cultural industry and the environment.

To facilitate the distinction between the coupling and coordination degrees of the cultural industry and environmental systems, and to classify the coordination levels of different calculation results, an evaluation standard for the coupling and coordination degree of these systems is established, as shown in Table 1. There is a proportional relationship between the coordination degree value and the coupling degree.

Cultural resources drive the development of the cultural industry. As people increasingly value cultural identity, the significance of national culture is recognized, energizing the growth of the cultural sector. At the same time, the cultural industry is influenced by natural resources and the ecological environment. To further understand the interaction between the cultural industry and the environment, it should be viewed as a holistic system encompassing national culture, industry, and ecology. These elements interact based on the internal laws, collectively affecting the cultural industry system. To optimize the system and achieve sustainable development, each element must maintain a continuous, stable, efficient, and coordinated development relationship. Within its constraints, the system will evolve from disorder at the micro level, gradually reaching an equilibrium state to sustain its macro condition. The environment of this dissipative structure can be described using entropy theory, reflecting its openness, synergy, and feedback capacity—essential for achieving self-organization and coordinated development. This relationship is expressed in Equation 12.

$$dc = dc_m + dc_e \tag{12}$$

The entropy change of the system, denoted as dc , consists of internal changes, dc_m , and changes resulting from interactions with the outside, dc_e . If Equation 12 is less than zero, the system behaves as an ordered state with self-organization, and the conditions $dc_e < 0$ and $|dc_e| > dc_m$ must be satisfied.

Equations 13–15 show the national culture, industry, and ecological environment indices, respectively.

$$z(m) = \sum_{a=1}^i o_a m_a \tag{13}$$

$$y(m) = \sum_{a=1}^i p_a n_a \quad (14)$$

$$t(m) = \sum_{a=1}^i q_a l_a \quad (15)$$

The indicators of ethnic culture, industry, and ecological environment development are z , y , and t , respectively, and the corresponding indicator weights are o_a , p_a , and q_a . Equations 16–18 show the coordination of each element's development.

$$L_1 = \frac{2\sqrt{z(m) \times y(m)}}{z(m) + y(m)} \quad (16)$$

$$L_2 = \frac{2\sqrt{z(m) \times t(m)}}{z(m) + t(m)} \quad (17)$$

$$L_3 = \frac{2\sqrt{y(m) \times t(m)}}{y(m) + t(m)} \quad (18)$$

RESULTS AND DISCUSSION

When combined with the concept of a green ecological environment, management of the cultural industry must fully consider the influencing factors and roles of the industry, economy, and environment. Due to varying economic development levels and natural environmental conditions, regional differences exist in the development of cultural industries and their contributions to the environment.

Table 2 presents the rate of change in the development of the green cultural industry across different regions from 2015 to 2019. For this analysis, the country is divided into three regions: east, central, and west. The data in Table 2 indicate that the development of the green cultural industry nationwide is on an upward trend, signifying positive growth.

Among the three regions, the eastern region consistently shows a higher average annual development rate compared to the national average. In contrast, both the central and western regions have lower average values, with the western region having the lowest average. This discrepancy is largely due to the eastern region's higher level of economic development, better supporting factors and conditions, and greater attention and support for the green cultural industry, leading to faster development efficiency. Conversely, the western region, with its lower overall economic development rate, has been lagging (Zhou et al., 2017). However, with efforts to attract talent and financial support, the efficiency of green culture industry development in the western region is improving.

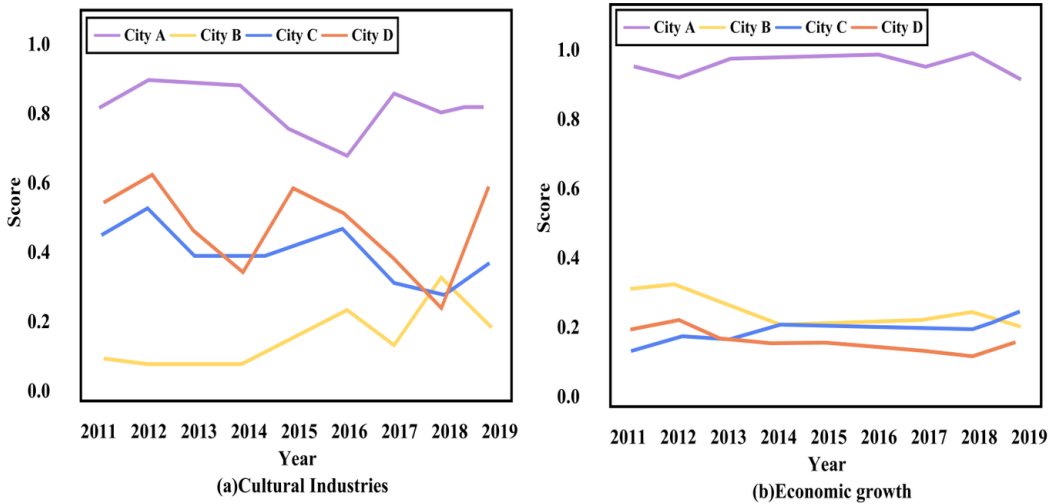
In addition, while the eastern region's ecological environment is more supportive of cultural industry development compared to the western region, it also faces greater environmental degradation (Hou et al., 2022). Despite the green cultural industry's potential to promote positive development and support ecological restoration, achieving these requires a longer period of time.

Although the western region is relatively less advanced economically than other regions, it has distinctive ethnic cultures and relatively good overall ecological protection. This paper analyzes the coupling coordination relationship among economic growth, cultural industry, and ecological environment in four western cities. See Figures 5 and 6 for the analysis results.

Table 2. Statistics on rate of change of green culture industry development by region, 2015–2019

	2015	2016	2017	2018	2019	Annual average
Eastern average	1.12	1.02	0.98	1.15	1.17	1.09
Central average	0.53	0.57	0.57	0.65	0.61	0.59
Western average	0.44	0.39	0.45	0.58	0.50	0.47
National average	0.69	0.66	0.66	0.80	0.76	0.72

Figure 5. Cultural industry scores and economic growth indicators in four cities



The data results show that, despite the four cities being in the same western region, their green cultural industry index scores exhibit different trends. City B’s early development index score is

Figure 6. Ecological environment and comprehensive index scores of the four cities

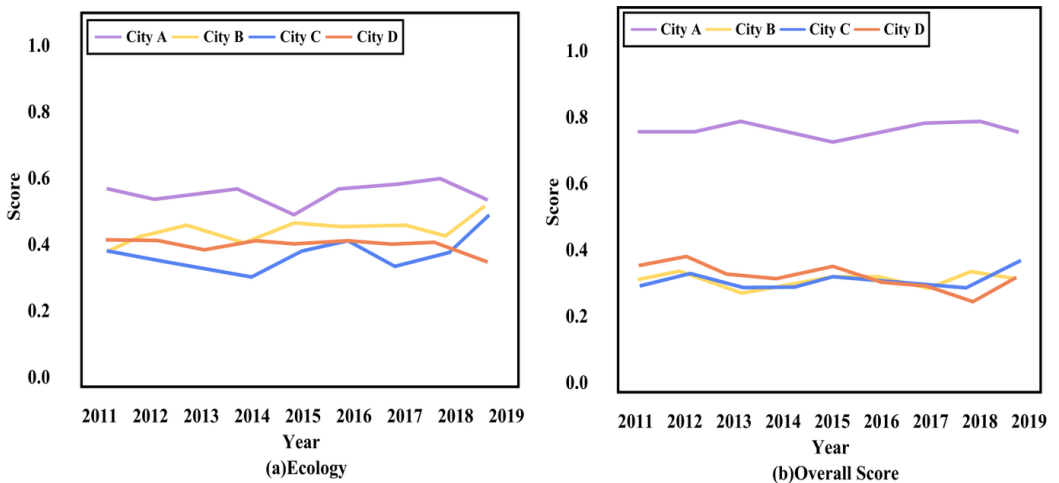
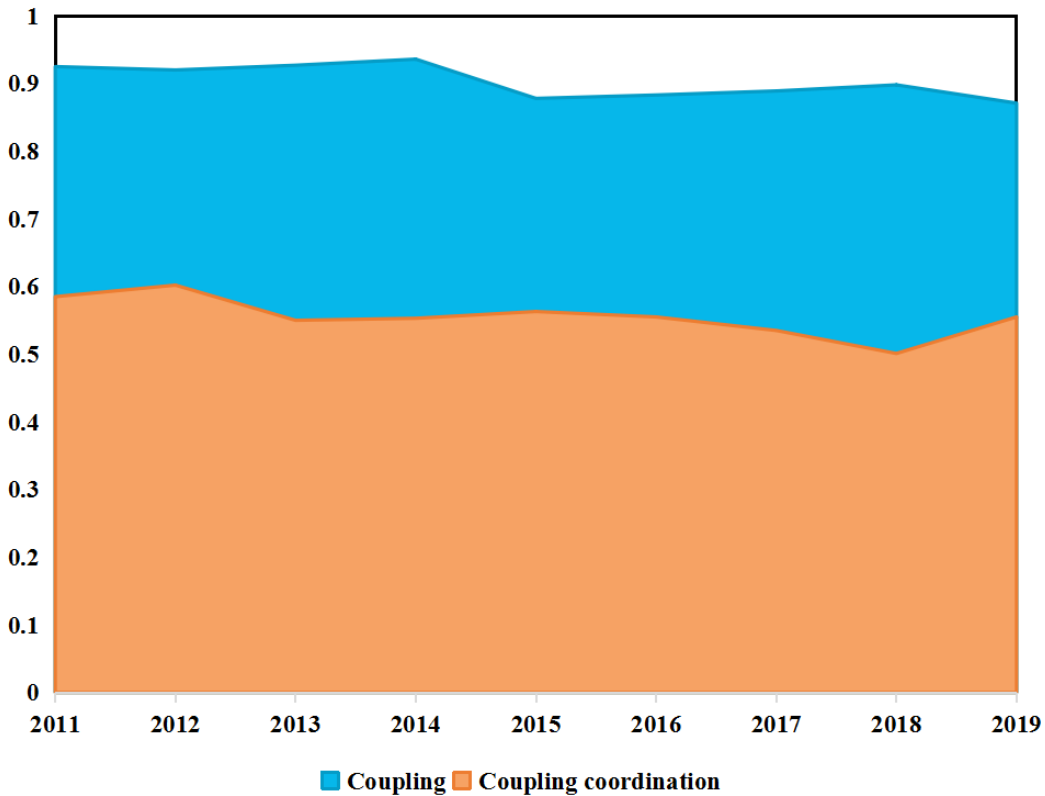


Figure 7. Coupling degree and coordination results for city D



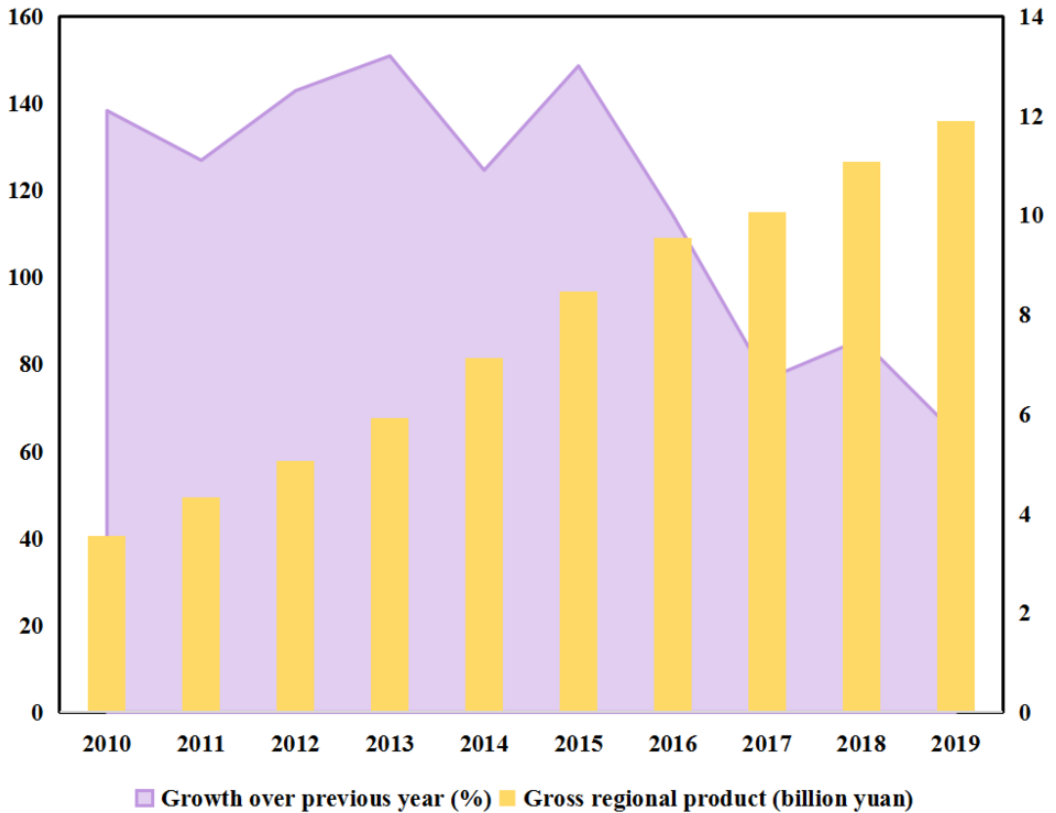
relatively low due to its weak economic foundation, undeveloped industrial structure, and unclear development goals and direction for cultural resources. Although the cultural industry development indexes for cities C and D are higher than those of city B, their scores fluctuate significantly, suggesting that these cities may be in a phase of uncertain or exploratory development.

The economic and ecological environment scores for cities B, C, and D follow a consistent trend, with only minor differences. As economic growth and cultural industry scores improve, the ecological environment scores also rise. In particular, City C shows significant improvement in these indicators after moving beyond its early exploration stage and clarifying its development direction, leading to enhanced economic growth and ecological conditions. While City D has improved its economic and cultural industry scores, its ecological environment score has decreased, likely because the city is still transitioning from a rough development model to green development, and the positive effects on the environment have yet to materialize. City A, with the highest economic level among the four, has seen the fastest growth in its green cultural industry, which has had the most positive impact on the ecological environment, maintaining economic growth while minimizing adverse effects on the environment.

In this paper, City D is selected for further analysis to determine its coupling and coordination degree, which will help better assess the impact of the green cultural industry on the environment. Figure 7 presents the results.

In Figure 7, the coupling degree H of City D is between 0.8 and 1. A higher H value indicates greater interaction between systems, specifically cultural industries and the environment, placing the city in the high-level coupling stage. The coupling coordination degree T of City D is between 0.4

Figure 8. Changes in regional GDP for city D



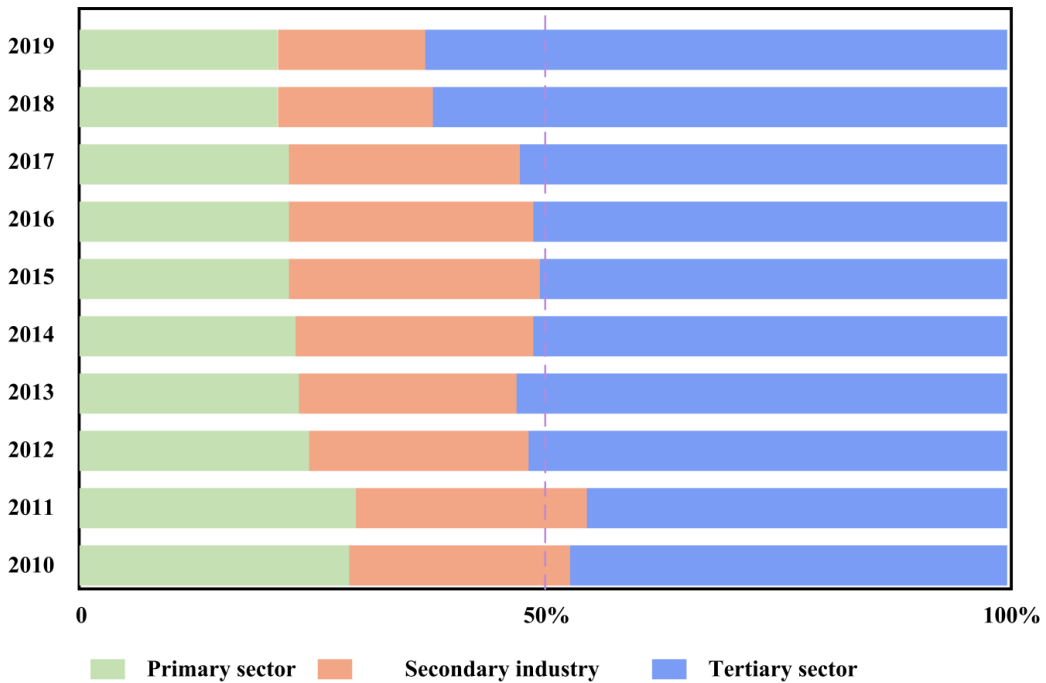
and 0.6. A higher T value signifies greater coordination between systems, indicating that City D’s cultural industry and environment are moderately coordinated.

The trend of coupling coordination degree in City D shows some volatility. It generally increases in the early stages but gradually decreases in the later stages, primarily due to a decline in the cultural industry score during that period. While City D has better cultural resources than City B and City C, its level of economic development is the lowest. The incomplete infrastructure in City D hampers its ability to provide adequate financial support and environmental compensation. Furthermore, the cultural development services are insufficient, leading to a lack of long-term development momentum, adversely affecting the economy and the ecological environment. In the later stages, the city adopted a green ecological approach, integrating cultural resources into the tourism industry, fostering cultural innovation, and achieving deeper and continuous cultural industry development. This, in turn, led to a rebound in scores and a positive impact on the ecological environment.

Figure 8 shows the change in regional GDP in City D. The city’s GDP shows continuous growth, and although the year-on-year growth rate starts to decline after 2015, the overall growth remains positive. This indicates that the city’s economic level is consistently improving, and the development of its cultural industry provides support and a positive influence.

Figure 9 presents the comparative statistics of the value of primary, secondary, and tertiary industries in City D. The data show a continuous optimization of the city’s industrial structure, with the proportion of tertiary industries increasing steadily. By 2010, the value of tertiary industries surpassed half of the total value of all three sectors, maintaining a proportion above 50% despite minor fluctuations. During this period, the city transitioned from exploring cultural industry development

Figure 9. Comparison of primary, secondary, and tertiary industry values in city D



to innovating and expanding its cultural resources, driven by national cultural characteristics. This contributed to industrial growth, increased the value of the tertiary industry, and accelerated the optimization of the industrial structure. Economic support for the deep development of cultural resources also improved ecological protection and restoration, enhancing environmental resilience and providing stronger resource support for cultural industry development.

As mentioned earlier, a strong interaction exists between the cultural industry, economic growth, and the ecological environment. The development of any one of these elements requires support from the others, and similarly, the obstruction of one will negatively affect the others. While rich cultural resources are a vital foundation for the development of cultural industry, without clear development goals, these resources alone cannot ensure efficient industrial growth. Instead, they may accelerate the consumption of natural resources and increase the strain on the ecological environment.

According to the case study results, there is no positive correlation between the richness of cultural resources and the development of cultural industries. This finding supports the theory that blind resource development does not improve development efficiency. The study also found a strong interaction between the cultural industry, the economy, and the environment, which provides valuable insights for green development practices. The development of a green cultural industry is inseparable from economic growth and the ecological environment, both of which must be considered in future initiatives. Relevant policies can also draw on this understanding. For example, the development of a green cultural industry should be grounded in regional and national cultural characteristics while deeply exploring cultural resources to drive sustainable growth. Expanding the scale of the green cultural industry will enhance economic growth efficiency, provide financial support for ecological protection, optimize industrial structures, and foster economic growth based on environmental preservation. This approach will strengthen the foundation of the cultural industry and establish a virtuous cycle of sustainable development.

In addition, this study focuses exclusively on City D in the western region and conducts a detailed data analysis. However, there are limitations, including the lack of research on cities in the eastern and central regions. Furthermore, the results obtained lack further verification methods to confirm the reliability and accuracy of the findings. Addressing these gaps will be a crucial direction for future research.

CONCLUSION

This paper investigates the environmental promotion effect of the green cultural industry by integrating the concept of a green ecological environment with an interaction model, utilizing the entropy value method and the coupling coordination degree model for analysis. The results reveal no positive correlation between the richness of cultural resources and the development of the cultural industry; Blind resource development does not enhance industry efficiency. Instead, there is a significant interaction among the cultural industry, the economy, and the environment. Based on national cultural characteristics, green cultural resource development can deepen resource utilization and support sustainable development. Expanding the scale of the green cultural industry can improve economic growth efficiency, provide financial support for ecological protection, reduce resource consumption and dependence, optimize industrial structure, enhance ecological carrying capacity, and establish a sustainable and virtuous development cycle for all three sectors.

Based on the research results, this paper proposes the following policy suggestions:

1. Establish and improve the policy system: Promote the integration of cultural industry with the green ecological environment and provide ways to transform it into a green economy.
2. Adapt to local conditions: Based on the current situation of cultural development in various regions, strengthen national cultural identity and stimulate cultural consumption to enhance environmental protection and reduce the consumption and destruction of ecological resources.
3. Formulate environmental regulatory policies: Strengthen the synergy between cultural industries and the economic environment. Utilize environmental regulatory policy tools to enhance ecological supervision while accelerating the development of cultural industries.

This paper provides valuable insights into the development strategy of the green cultural industry, economic growth, and environmental resources, highlighting its significance for practical research on the sustainable development of the green cultural sector. The study confirms the important practical significance of the green development effects of the cultural industry. However, it has limitations. This research focuses only on City D in the western region and conducts a series of data analyses that lack coverage of the eastern and central regions. Future research will aim to address this gap.

AUTHOR NOTE

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