



Evaluation of the Trend of Industrial Integration under the Context of Cultural and Tourism Integration and Analysis of Path Dependence

Qian Lu

Sichuan University, School of Economics, Chengdu, 610065, China

E-Mail: lqian111@163.com

Abstract. In conjunction with the transformative shift in China's economic growth model, industrial integration plays a pivotal role in facilitating industrial structural upgrading and promoting regional harmonized development. It represents an essential and inevitable choice for industrial development to align with the prevailing trends of the era. This study selects data pertaining to the cultural and tourism industries from 31 Chinese regions over the span of ten years (2010-2019). Employing a comprehensive evaluation index system comprising nineteen indicators derived from two subsystems and three dimensions, the study constructs a framework for assessing the overall level of industrial development. Subsequently, utilizing a coupled coordination degree model, the integration and development of the cultural and tourism industries are gauged and classified, thereby exploring the operational mechanisms underlying path dependence and analyzing the intricate relationship between cultural and tourism industry integration and path dependence. Moreover, this research addresses the theoretical causes underlying the entrapment of cultural and tourism industry integration in a state of path-dependent lock-in, offering multifaceted optimization recommendations aimed at breaking free from path dependence and fostering path creation within the context of the contemporary era.

Keywords: Industrial integration; Path dependence; Path creation; Coupling coordination

1 Introduction

China's economy is currently in a period of focusing on high-quality growth. The modern industrial system is an important pillar of the concept of a "modernized economic system" proposed in the 19th National Congress report. Adhering to the trend of industrial integration and development is particularly important. Industrial integration is an inevitable choice for the development of emerging industries and the transformation and upgrading of traditional industries, and it is also an inevitable trend in the development of the modern industrial economy.

The cultural industry and tourism industry both belong to the "green sunrise industries" and hold significant importance in their development status. They have different

© The Author(s) 2023

C. Chen et al. (eds.), *Proceedings of the 3rd International Conference on Digital Economy and Computer Application (DECA 2023)*, Atlantis Highlights in Computer Sciences 17,

https://doi.org/10.2991/978-94-6463-304-7_72

industrial structures and boundaries, and the inherent attributes of both determine the possibility of their integration and development. Zhang Haiyan and Wang Zhongyun have constructed an evaluation index system for industrial competitiveness, illustrating how industrial integration can enhance the competitiveness of both the cultural industry and the tourism industry from multiple functional aspects. Hou Bing and Zhou Xiaoqian have constructed an evaluation index system for the cultural tourism industry, measuring and analyzing the development and integration of the cultural and tourism industries.

Due to comparative advantages in labor and resource endowments, China's industrial development exhibits path dependence. The concept of path dependence in the field of social sciences can be traced back to economist David's discussion of the QWERTY keyboard in 1985¹. Arthur further studied this concept and found that many technological evolutions in "increasing returns to scale" economic activities often exhibit multiple equilibria². The reinforcing mechanisms of small random historical events, learning effects, and sunk costs are factors that contribute to path dependence. If industrial integration remains locked in an inefficient path for a long time, it will hinder the structural transformation of industries and the development of the national economy. Therefore, breaking through path dependence and achieving a transition from path dependence to path creation in industrial integration is of great research significance in promoting industrial development and driving economic growth³.

An economic development system solely relying on the tourism industry has higher vulnerability and weaker resilience. Negative effects such as the fragility of the tourism industry are often masked by the apparent prosperity of its economic development when the external economic environment is favorable. However, once there are drastic fluctuations in the external environment, the negative effects of path dependence and path lock-in will be fully exposed. Meanwhile, the development of the cultural industry is relatively stable and does not experience significant fluctuations. Promoting the integration and development of the cultural industry and the tourism industry, breaking the path lock-in state in the process of tourism industry development, creating new economic growth points, and forming a cultural tourism industry chain have been achieved⁴.

2 Assessment of the composite development level and integration degree of the cultural and tourism industries

There is currently limited quantitative research on the integrated development of China's cultural and tourism industries. Drawing upon the works of scholars such as Guo Guofeng, Weng Gangmin, and Bao Hongjie, and considering the reliability of data acquisition, this study constructs a comprehensive evaluation system for the integration degree of the cultural and tourism industries, As shown in Table 1.

Table 1. Evaluation indicators for the degree of integration between the cultural and tourism industries

Project	Primary Indicator	Secondary Indicator	Unit	Importance	
Subsystem for Tourism Industry Development (T)	Aggregate level (T ₁)	T ₁₋₁ number of travel agencies	Pieces	0.1651	
		T ₁₋₂ number of star-rated hotels	Pieces	0.1305	
		T ₁₋₃ foreign tourists	Ten thousand person-times	0.1254	
		T ₁₋₄ local tourists	Hundred million person-times	0.0972	
	Achievement level (T ₂)	T ₂₋₁ income from foreign tourism	Hundred million US Dollars	0.0811	
		T ₂₋₂ operating income of star-rated hotels	Hundred million Yuan	0.0895	
		T ₂₋₃ operating income of travel agencies.	Hundred million Yuan	0.0880	
		T ₃₋₁ number of employees in star-rated hotels	People	0.1266	
	Element level (T ₃)	T ₃₋₂ number of students in tourism colleges	Ten Thousand People	0.0964	
	Subsystem for Cultural Industry Development (C)	Aggregate level (C ₁)	C ₁₋₁ community cultural organizations	Pieces	0.0623
			C ₁₋₂ museum	Pieces	0.0967
			C ₁₋₃ art performance group	Pieces	0.1830
		Achievement level (C ₂)	C ₂₋₁ per capita cultural expenditure	Yuan	0.0994
			C ₂₋₂ total floor area of community cultural facilities	Square Meters per ten thousand people	0.0668
C ₂₋₃ performance revenue of art groups			Ten Thousand Yuan	0.0988	
C ₃₋₁ personnel engaged in cultural relics			People	0.0736	
Element level (C ₃)		C ₃₋₂ personnel in grassroots cultural institutions	People	0.0780	
		C ₃₋₃ museum staff	People	0.0901	
		C ₃₋₄ employment in performing arts ensembles	People	0.1514	

Relevant data on the cultural and tourism industries of 31 regions in China from 2010 to 2019 were collected through sources including the "China Statistical Yearbook," "China Cultural Relics Statistical Yearbook," "China Tourism Statistical Year-

book," and the official website of the Ministry of Culture and Tourism of the People's Republic of China.

Firstly, the raw data is standardized, and then the entropy method is used to assign weights to each indicator.

$$w_j = \frac{1 + \alpha \sum_{i=1}^n S_{ij} \ln S_{ij}}{\sum_j^n (1 + \alpha \sum_{i=1}^n S_{ij} \ln S_{ij})} \quad (j = 1, 2, 3 \dots n)$$

Comprehensive evaluation function for the cultural industry:

$$F(c) = \sum_{j=1}^n w_j M_{ij} \quad (i = 1, 2, 3 \dots m; j = 1, 2, 3 \dots n)$$

Comprehensive evaluation function for the tourism industry:

$$G(t) = \sum_{j=1}^n w_j N_{ij} \quad (i = 1, 2, 3 \dots m; j = 1, 2, 3 \dots n)$$

The coupling degree is used to measure the level of coordination within a system. Due to the scope of this paper only involving two industries, the model is simplified as follows:

$$EC = \sqrt{\frac{F(c) \cdot G(t)}{[F(c) + G(t)] \cdot [F(c) + G(t)]}}$$

As the coupling degree is difficult to reflect the actual level of coordination in integrated development, a deepened coupling coordination model is applied to measure the development of cultural and tourism industry integration.

$$D[F(c), G(t)] = \sqrt{EC \cdot T}$$

$$T = \gamma F(c) + \eta G(t)$$

D represents the coupling coordination degree of the cultural and tourism industry integration development system; T is the coordination index, where γ and η are undetermined coefficients, are both set to 0.5. The uniform distribution method is adopted to divide the level of industrial integration, as shown in Table 2.

Table 2. The integration and development stages of industries and their classification levels

Coupling coordination degree D	Integration stage	Explanation	Scope
0<D<0.2	The initial stage	Loose inter-industry connections	0.00~0.09 0.10~0.19
0.2<D<0.4	The starting stage	Gradual mutual influence between industries	0.20~0.29 0.30~0.39
0.4<D<0.6	The development stage	The mutual influence between industries is gradually	0.40~0.49 0.50~0.59

		strengthening	
0.6<D<0.8	The stable stage	Inter-industry mutual promotion of development	0.60~0.69 0.70~0.79
0.8<D<1.0	The mature stage	Positive coordination and high interdependence between industries	0.80~0.89 0.90~1.00

3 Conclusion

Based on the coupling coordination degree model and combined with data, the coupling coordination degree D from 2010 to 2019 is calculated. The classification criteria are used to assess the level of integrated development of the national cultural and tourism industries, as shown in Figure 1.

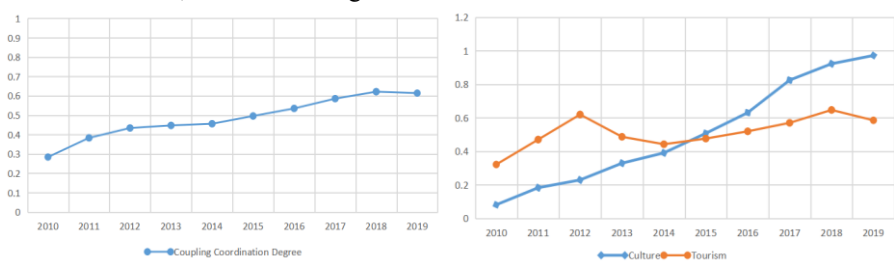


Fig. 1. National trend of integration in the cultural and tourism industry

Based on empirical results, the integrated development of China's cultural and tourism industries from 2010 to 2019 can be divided into three stages:

The first stage was from 2010 to 2012, during which the integration of the cultural and tourism industries was in the initial stage. The degree of coupling coordination was severely imbalanced to moderately imbalanced. The tourism industry experienced rapid development, while the cultural industry grew slowly. The inter-industry connection was not close enough to provide effective support.

The second stage is from 2012 to 2015. During these three years, the integration of the cultural and tourism industries entered the development stage. The mutual influence between the two industries gradually strengthened but with a relatively small increase in the coupling coordination degree. The cultural industry experienced rapid improvement, while the development level of the tourism industry declined significantly. Structural contradictions and other issues in the tourism industry emerged during this stage. It was no longer viable to continue relying on resource-dependent development models, as it could easily lead to the "resource curse." Instead, efforts should be made to enhance cultural content⁵.

The third stage is after 2015 when the integration of the cultural and tourism industries entered a stable phase. The degree of coupling coordination increased from mild imbalance to primary coordination. Both industries mutually promoted each other's development. Moreover, the development orientation shifted from prioritizing tourism to prioritizing culture. Under the guidance of government policies and the

high-quality development of people's living standards, the cultural industry flourished. The overall development level significantly improved, and the tourism industry became a strategic pillar industry for the country. In this stage, the tourism industry incorporated various cultural elements such as red tourism, IP tourism, and smart tourism. The government began to pay attention to the emerging formats of cultural and tourism integration and issued a series of supporting documents. As a result, the cultural and tourism industries exhibited a vitality different from the past.

Using ArcGIS 10.8, a visual analysis was conducted on the level of integration and coordination of the cultural and tourism industries in different regions of China, as shown in Figure 2.

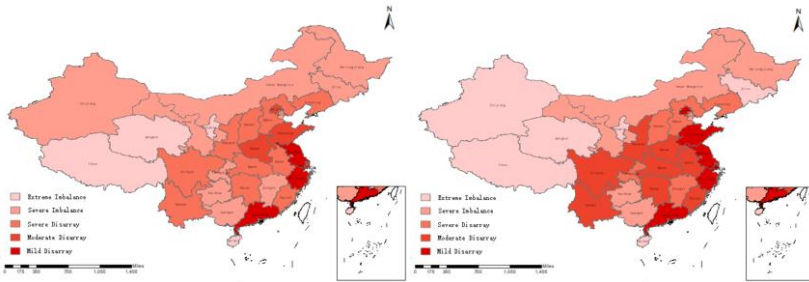


Fig. 2. Spatial differentiation map of the integrated development level of cultural and tourism industries in various regions (Left: 2010, Right: 2019)

From the perspective of various regions, the level of integration and development of the cultural and tourism industries has improved over the period from 2010 to 2019. There are noticeable regional differences in the level of integration of the cultural and tourism industries across China. ⁶The first tier of integration is found in the eastern coastal region of China, which is economically developed and has a high level of tourism industry development, making it conducive to the integrated development of the cultural and tourism industries. The second tier of integration is observed in the central region and the Yangtze River Basin, where there is a rich historical and cultural heritage, flat terrain, and convenient transportation, providing significant development potential for the integrated development of the cultural and tourism industries⁷. The third tier of integration is found in the western and northeastern regions, where the economic level is relatively backward, some areas have a low population density and inconvenient transportation, and the infrastructure level of the cultural and tourism industries is relatively low. Therefore, the overall level of integration and development of the cultural and tourism industries in these regions is lower than the national average.

4 Proposed countermeasures and suggestions

The current integration and development of the cultural and tourism industry face the dilemma of path dependency. Firstly, there is a single-minded focus on economic indicators as the dominant metric when evaluating the integration and development of the cultural and tourism industry. The attention given to comprehensive indicators such

as cultural heritage, ecological conservation, and social development is insufficient. Secondly, the sensitivity of the development environment is a challenge. The tourism industry in our country relies heavily on environmental factors as it is a resource-based industry. Overdeveloping tourism in regions rich in tourism resources can lead to imbalanced regional industrial structures and even the phenomenon of the "resource curse," where an area remains poor despite its abundance of resources. Thirdly, there is homogeneity in the integration models. In the early stages of the integration and development of the cultural and tourism industry, there may be a few regional pilot projects with demonstrative effects. However, many subsequent regions simply replicate the integration models of these pilot projects without adapting them to their own unique resources, resulting in superficial integration of culture and tourism. Finally, there is a surface-level degree of integration. Although both the government and enterprises attach importance to the integration of the cultural and tourism industry, the actual integration process still exhibits a dichotomy between cultural and tourism activities. There are issues with the overall layout of the integration, insufficient market-oriented operations, and a low degree of organic integration within the industry.

Based on these challenges, several policy recommendations are proposed to transform the integration of the cultural and tourism industry from path dependence to path creation:

Promote the scientific concept of industry integration. Correct the integration concept from its roots by recognizing that the development of industries is complementary. During the integration and development of the cultural and tourism industry, the paradigm of being solely driven by economic considerations should be changed. Instead, the cultural essence should be deeply analyzed, emphasizing factors such as cultural heritage, ecological balance, and prevention of excessive resource utilization resulting in a "resource curse." Under the guidance of ecological principles, resources should be scientifically and reasonably managed and utilized, industry chains expanded, and added value increased.

Promote the normalization of holistic tourism. Holistic tourism refers to extending the tourism industry through both temporal and spatial dimensions, integrating regional resources organically. Holistic tourism goes beyond merely appreciating natural or man-made landscapes; it emphasizes involving residents in destination areas to provide immersive experiential services for consumers. This more comprehensive and open tourism model enables consumers to participate more deeply in local customs and ethnic traditions, advancing the sophistication of cultural tourism. Holistic tourism also requires support from key projects or well-known brands, such as combining with tourism e-commerce to promote rural revitalization.

Promote asset-light projects. The government plays a crucial role in promoting the integration of the cultural and tourism industry, but enterprises are the main actors in the integration. In previous cultural and tourism industry development processes, there has been a trend toward heavy asset investment. This is due to the desire of enterprises to preserve and increase the value of purchased land and buildings, along with their unfamiliarity with new business models in the cultural and tourism industry. Enterprises should recognize the importance of asset-light models. The cultural and tourism industry is primarily driven by cultural creativity. Reducing investment in heavy assets

(such as large visitor centers, ordinary landscapes, squares, etc.) can reduce cost burdens, increase profitability, and promote the entry of small-scale units into the cultural and tourism industry, making investment more diverse.

Improve the institutional environment. To break free from the path dependency and achieve path innovation in the integration of the cultural and tourism industry, it is necessary to address path dependence issues at both the technological and institutional levels. The evolution of institutions affects economic performance, technology supports industry integration, culture is the core of integration, and innovation is the key to integration. The social institutional environment has become an important factor in attracting high-quality talent. With high-quality human capital, the source of innovation can be maintained.

Acknowledgment

Work partially supported by grant CJZ22-03 of the Sichuan Province Philosophy and Social Science Key Research Base.

References

1. David P A . Clio and the economics of QWERTY[J]. *American Economic Review*,1985,75(2): 332-337.
2. Brian A W . Competing Technologies, Increasing Returns, and Lock-In by Historical Events[J]. *The Economic Journal*,1989(394):394.
3. Schlosser F,Jesper M,Vogelsang J, et al. Large-scale heat pumps: Applications, performance, economic feasibility and industrial integration[J]. *Renewable and Sustainable Energy Reviews*,2020,133.
4. Yongxun Z,Xiande L. Protecting Traditional Agricultural Landscapes by Promoting Industrial Integration Development: Practices from Important Agricultural Heritage Systems (IAHS) Sites in China[J]. *Land*,2022,11(8).
5. Tripl M, Baumgartinger-Seiringer S, Frangenheim A, et al. Unravelling green regional industrial path development: Regional preconditions, asset modification and agency[J]. *Geoforum*, 2020, 111: 189-197.
6. Hassink R, Isaksen A, Tripl M. Towards a comprehensive understanding of new regional industrial path development[J]. *Regional Studies*, 2019, 53(11): 1636-1645.
7. Liu Y, Zhang X, Pan X, et al. The spatial integration and coordinated industrial development of urban agglomerations in the Yangtze River Economic Belt, China[J]. *Cities*, 2020, 104.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

