

RESEARCH ON THE COUPLING COORDINATION MECHANISM
AND SPATIAL-TEMPORAL DIFFERENTIATION PATTERN
BETWEEN TOURISM AND NEW-TYPE URBANIZATION: A CASE
STUDY OF INNER MONGOLIA, CHINA

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Abstract : Based on the systematic co-evolution of tourism and new-type urbanization, the coupled coordination model is used to analyze the coupled coordination mechanism and spatio-temporal differentiation patterns of tourism and new-type urbanization in Inner Mongolia during the period 2000-2022. The results show that: (1) The comprehensive development index of tourism and new-type urbanization shows a simultaneous upward trend, and there is a strong two-way synergistic interaction effect between tourism and new-type urbanization; (2) In terms of timing characteristics, coupling degree is always in the high-quality coupling stage, and coupling coordination degree shows an evolution trend of "rising and falling", and lags behind coupling degree; (3) Spatial pattern: From the obvious differences, it gradually realizes the trend of collaborative evolution, and presents the pattern characteristics of "strong in the middle, weak in the west, and concentrated in the east"; (4) It is proposed to accelerate the construction of tourism urbanization in Inner Mongolia and comprehensively promote the coordinated development path of all-region tourism and new-type urbanization in Inner Mongolia.

Key words: Tourism ; New-type Urbanization ; Coupling Coordination Model ; Spatial-temporal evolution; Global tourism

1. Introduction

With the rapid development of China's economy, tourism revenue and urbanization have achieved rapid growth. The promotion of new-type urbanization is an important requirement for the high-quality development of Inner Mongolia, and it is also the internal driving force for the sustainable and balanced growth of the regional economy in the future. Tourism is a new driving force for the development of new-type urbanization and an important engine for the high-quality development of regional economy. It plays an important role in promoting the transformation and upgrading of regional economy, functional diversification, social change, cultural

reconstruction, labor employment, and driving the expansion of urban areas. As an important engine for economic growth, new-type urbanization can provide sound ecological space support for the promotion of tourism through economic development, infrastructure improvement, social civilization progress, and ecological environment improvement, and promote the high-quality development of tourism. Inner Mongolia has the advantages of rich tourism resources, prominent tourism brand effect, complete tourism industry system and broad tourism market demand. As an important strategic pillar industry for regional economic and social development and a basic supporting industry for accelerating the process of urbanization, how to achieve positive interactive development of the two is of great significance for promoting high-quality development of Inner Mongolia.

Relevant literature at home and abroad [1-4] provides important theoretical support for this study. It mainly focuses on tourism urbanization, the driving mechanism of tourism urbanization, the development model of tourism urbanization, the influencing factors of tourism urbanization and other aspects, and shifts from one-way relationship research to two-way relationship interactive relationship research, but there are also shortcomings: Most of the research methods are based on regression model and coupling model, ignoring the endogenous problem, and it is difficult to fully explain the realistic path of interactive development between tourism and new-type urbanization from the perspective of time and space. The research scale is mostly based on the whole country or economically developed provinces, and the relationship between tourism and new-type urbanization development is not discussed from the level of important strategic regions of the country. Therefore, this paper takes Inner Mongolia as the research object, based on the panel data from 2000 to 2022, and uses the coupling degree and coupling coordination degree model to conduct an in-depth study on the coupling coordination mechanism and spatial and temporal differentiation pattern between tourism and new-type urbanization in Inner Mongolia.

2. Research methods

2.1 Index system construction

Based on the interaction mechanism between tourism development and new-type urbanization, the research results of the academic circle on the coupling and coordinated development of tourism and new-type urbanization, based on the principles of comprehensiveness, scientificity and operability, construct two indicator systems of Inner Mongolia tourism system and new-type urbanization system, and select a total of 28 specific indicator factors (Table 1).

Table 1. Comprehensive evaluation index system of tourism and new-type urbanization

System Layer	Subsystem Layer	Index
Tourism	Tourism Market	Total number of tourists, Inbound tourists, Domestic tourists
	Tourism Economy	Total tourism revenue, International tourism revenue, Domestic tourism revenue, Tourism revenue as a percentage

		of GDP
	Tourism Industry	Number of employees in the tertiary industry, Number of interstellar hotels, Total number of travel agencies
	Tourism Support	Highway route mileage, Passenger turnover, Public transport vehicles per 10,000 people, Public toilets per 10,000 people
New-type urbanization	Economic Urbanization	Regional GDP, Per capita regional GDP, Proportion of secondary and tertiary industry GDP, Per capita disposable income of permanent urban residents
	Population Urbanization	The number of employed persons at the end of the year, Urbanization rate, Proportion of employees in the secondary and tertiary industries
	Social Urbanization	Registered urban unemployment rate, Number of health technicians, Per capita expenditure on education, Number of full-time teachers in ordinary secondary schools
	Land Urbanization	Per capita park green area, Per capita urban road area, Green coverage rate of built-up areas

2.2 Research Methods

Based on the analysis and identification of the co-evolution relationship between tourism and new-type urbanization, this paper draws on existing literature [5] and comprehensively uses coupling degree and coupling coordination degree models to study the coupling coordination mechanism and spatio-temporal differentiation pattern between tourism and new-type urbanization in Inner Mongolia from 2000 to 2022 years. The index data of tourism industry and new-type urbanization are all from Inner Mongolia Statistical Yearbook (2001-2023), and individual missing data are supplemented by interpolation method of adjacent years. In order to eliminate the impact of different dimensions and physical meanings among indicators on the results, the extreme value method is first used to conduct dimensionless processing on the original data, and then the entropy method is used to objectively assign weights to the subsystems and indicators. On this basis, the comprehensive linear weighting method is used to calculate the comprehensive development level of tourism and new-type urbanization. By using coupling degree and coupling coordination degree model, we can distinguish the spatio-temporal process, interaction mechanism and spatio-temporal differentiation pattern of tourism and urbanization co-evolution.

3. Result analysis

3.1 Comprehensive evaluation of tourism and new-type urbanization

The comprehensive index of tourism and new-type urbanization in Inner Mongolia showed a synchronous and continuous upward trend from 2000 to 2022, rising from 0.0774 in 2000 to 0.7202 in 2016. Although there was a short downward trend in 2017, it showed an upward trend again in 2018, reaching 0.8573 in 2022. The evolution process is comprehensively manifested in two important development periods. 2000-2016 was a period of rapid and continuous rise. In 2017, regional

economic structure adjustment occurred, and after a short adjustment, 2018 showed a relatively continuous rise. On the whole, despite the impact of the novel coronavirus epidemic for three years, the tourism demand of urban residents is still strong, and tourism and new-type urbanization have achieved coordinated development.

3.2 Spatio-temporal comprehensive analysis of coupling degree

The time evolution trend of coupling degree showed a change trend of slow rising, stable and decreasing fluctuation, the coupling degree increased slowly from 0.9310 in 2000 to 0.9904 in 2004, and remained near 1 for a long time from 2005 to 2019. From 2020 to 2022, due to the impact of the novel coronavirus epidemic, tourism activities stopped completely. Resulting in a small decrease in coupling degree. Coupling degree has experienced a high quality coupling evolution stage for a long time. The spatial evolution trend of coupling degree showed a co-evolution trend at the same time. Since 2022, 6 cities including Hulunbuir, Xingan, Tongliao, Ulanqab, Bayannur and Wuhai have always maintained high-quality coupling characteristics, while the other cities have experienced excessively high level coupling stage. In 2022, 5 cities such as Hohhot, Baotou, Xilingol, Ordos and Alashan will have high level coupling, and 7 cities such as Hulunbuir, Xingan, Tongliao, Chifeng, Ulanqab, Bayannur and Wuhai will have high quality coupling.

3.3 Spatio-temporal comprehensive analysis of coupling coordination degree

The time variation trend of the coupling coordination degree showed a rapid upward evolution trend, and the coupling coordination degree rapidly increased from 0.2689 in 2000 to 0.8891 in 2019, and continued to decline to 0.7472 in 2020-2022. It can be divided into two stages: the period of rapid growth from 2000 to 20019, and the period of continuous decline from 2020 to 2022. The type of coupling coordination degree experience: four coupling coordination degree evolution processes, including Severe disorder (2000), Mild disorder (2001-2005), moderate coordination (2006-2011), and good coordination (2012-2022), the tourism system and the new-type urbanization system have initially realized coordinated development, and the coupling coordination degree still has a large room for improvement. The spatial variation trend of coupling coordination degree shows a synchronous co-evolution trend, among which Hohhot and Baotou are located in the middle of Inner Mongolia, with outstanding economic and transportation advantages, coupling coordination degree achieved high quality coupling in 2017-2019. Hulunbuir, Tongliao and Xilingol grasslands have advantages in tourism resources and strong tourism attraction, and the coupling coordination degree reached high quality coupling in 2019. The coupling coordination degree of all cities affected by the epidemic in 2020-2022 showed a downward trend, and there is still a large space for development in the future.

4. Conclusions and Suggestions

4. Conclusion

By constructing a comprehensive evaluation index system for tourism and new-

type urbanization, this paper empirically analyzes the spatio-temporal evolution characteristics of coupling coordination between tourism and new-type urbanization system in 12 cities of Inner Mongolia from 2000 to 2022 with the help of coupling degree and coupling coordination degree models, and draws the following conclusions: Both tourism and new-type urbanization in Inner Mongolia have maintained a continuous upward trend, and a continuous and stable synergistic positive influence has been formed between tourism and new-type urbanization. The coupling degree experienced the evolution process of first rising and then declining, and was in the high-quality coupling stage for a long time, and all cities showed a co-evolution trend at the same time. The experience of coupling coordination degree is as follows: four evolution stages, namely, severe disorder, mild disorder, moderate coordination and good coordination. The location traffic advantage of central cities and the tourism resource advantage of eastern cities are the prerequisite and basis for achieving high-quality coupling. The spatio-temporal evolution of the coupling coordination degree showed obvious differences, and gradually realized a cooperative evolution trend, and presented an evolutionary pattern of "strong in the middle, weak in the west, concentrated in the east".

4.2 Suggestions

Strengthen the core driving role of central cities, accelerate the construction of tourism urbanization in Inner Mongolia, tourism development planning in the process of urbanization, and enhance the function of urban reception services. Efficient use of the comprehensive benefits of the tourism industry, the adoption of "tourism + real estate", "tourism + technology", "tourism + transportation", "tourism + poverty alleviation" and other means to promote urbanization. Vigorously promote the process of all-region tourism, tap regional tourism resources, build well-known tourism brands, actively cultivate diversified tourism products, and upgrade the quality of the tourism industry.

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