

A Dual-Oriented Evaluation Study on High-Quality Development of Urban Cultural Tourism Industry: Brand and Green Development

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Abstract: Driven by the dual objectives of carbon peaking and carbon neutrality alongside consumption upgrading, “branding” and “green transformation” have become pivotal strategies for urban cultural tourism industries to overcome homogenized competition and achieve high-quality development. This study establishes an evaluation framework under the “brand + green” dual orientation, comprising five primary indicators (brand value, green ecology, industrial benefits, innovation-driven growth, service quality) and 18 secondary indicators. Using Analytic Hierarchy Process (AHP) for weight determination and entropy method for objective adjustment, a comprehensive evaluation model is developed. Through quantitative analysis and qualitative assessment of five exemplary cultural tourism cities, including Hangzhou, Kunming, Xiamen, Xi’an, and Qingdao, the research identifies their developmental strengths and weaknesses under this dual orientation. It proposes differentiated optimization strategies to provide theoretical support and practical references for achieving high-quality development in urban cultural tourism industries, emphasizing “brand prominence, ecological priority, and synergistic benefits”.

Keywords: Brand orientation; Green orientation; Urban cultural tourism industry; High-quality development; Evaluation system; Analytic hierarchy process

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1. Introduction

1.1. Research background

As a strategic pillar industry of the national economy, the high-quality development of cultural tourism serves as a key driver for transforming urban economic structures and enhancing cities’ competitiveness. Currently, China’s urban cultural tourism sector faces dual challenges: Firstly, homogenized development has led to the prominent “one-size-fits-all” phenomenon, where most cities lack distinctive brand identities in their cultural tourism offerings, making it difficult to sustain long-term appeal. Secondly, frequent ecological damage and resource waste in traditional cultural tourism development contradict the philosophy that “lucid waters and lush mountains are invaluable assets”, thereby constraining the industry’s sustainability^[1,2].

In this context, the dual integration of “brand + green” has become the key to breaking the deadlock. From a policy perspective, the “14th Five-Year Plan for Tourism Development” explicitly states “building a number of world-class tourism brands” and “promoting the green development of tourism”, incorporating the dual orientation into the national

strategy^[3]. From a market perspective, consumers not only pay attention to the brand recognition and cultural connotation of cultural and tourism products but also increasingly value the eco-friendliness of travel experiences. According to data from the China Tourism Academy in 2024, 72.3% of tourists listed “ecological environment” as the primary factor when choosing a travel destination, and 68.5% would prioritize cultural and tourism projects with clear brand IPs. Under this trend, how to scientifically evaluate the development level of urban cultural and tourism industries under the dual orientation of “brand + green” has become an urgent theoretical and practical issue to be addressed^[4].

1.2. Research significance

1.2.1. Theoretical significance

This study transcends the conventional single-dimensional evaluation paradigm of the cultural tourism industry by integrating “brand value” and “green ecology” into a unified analytical framework. It establishes a dual-oriented evaluation system that enriches the theoretical foundation for high-quality development in the sector. By combining the Analytic Hierarchy Process (AHP) with the entropy method, the research enhances the scientific rigor and credibility of evaluation outcomes, providing methodological references for similar studies^[5,6].

1.2.2. Practical significance

Through empirical analysis, this study identifies development gaps in the cultural tourism sector under dual-oriented policies in typical cities, such as insufficient brand IP stickiness and delayed adoption of green technologies. These findings provide precise evidence for formulating differentiated development strategies. The research guides cities to transition from “scale expansion” to “quality and efficiency” in cultural tourism development, achieving coordinated enhancement of brand influence and ecological sustainability.

1.3. Domestic and international research status

Foreign research began earlier, focusing on independent dimensions of brand and green development. At the brand level, American scholar Aaker’s “Five-Star Brand Equity Model” has been widely applied to evaluate the brand value of cultural and tourism destinations, emphasizing core elements such as brand awareness and brand associations. On the green front, the EU’s “Green Tourism Certification System” establishes evaluation criteria from perspectives like resource conservation and environmental friendliness^[7,8].

Domestic research demonstrates an evolutionary trend of “transition from independence to integration”: In brand-oriented studies, scholars have analyzed the development of cultural tourism IPs (e.g., Xi’an’s “Datang Nocturnal City”) and brand communication pathways, proposing an evaluation logic of “brand recognition → brand reputation → brand loyalty”. Green-oriented research has focused on ecological carrying capacity and low-carbon tourism technologies, establishing green evaluation indicators that encompass resources, environment, and benefits. Recent studies have begun exploring dual integration, such as examining cultivation pathways for “green cultural tourism brands”, yet a systematic dual-oriented evaluation framework remains underdeveloped. Empirical research predominantly concentrates on single cities, lacking cross-city comparative analyses. In summary, existing studies still face challenges including single-dimensional evaluation metrics, insufficient dual integration, and limited empirical samples, which provide exploration opportunities for this research^[9,10].

2. The core connotation and theoretical basis of the dual orientation of “brand + green”

2.1. Core content

The essence of brand-oriented development centers on cultivating distinctive cultural tourism brands. Through strategic positioning, IP development, promotional campaigns, and customer retention, this approach enhances the industry’s market recognition, reputation, and competitiveness. Key elements include: brand value (asset scale and premium pricing potential), brand communication (digital media impact and cross-regional collaboration), and brand experience (cultural depth

of offerings and visitor engagement). Green-oriented development prioritizes ecological sustainability by integrating green principles throughout the entire tourism value chain. This ensures efficient resource utilization, minimizes environmental impact, and achieves synergy between ecological and socio-economic benefits. Core components encompass: green ecology (environmental quality and resource capacity), green operations (low-carbon technologies and waste management efficiency), and green consumption (visitor awareness of eco-friendly choices and sustainable service delivery)^[11].

In the dual-guided collaborative relationship, “brand” serves as the “calling card” of the green cultural tourism industry. The green ecosystem infuses brands with unique value and sustainable competitiveness, creating a “mutually empowering, symbiotic” dynamic. Brands lacking green support risk becoming “flash-in-the-pan” homogenization traps, while green cultural tourism without brand empowerment struggles to realize market value transformation^[12].

2.2. Theoretical basis

The brand equity theory provides theoretical support for brand-oriented evaluation. It posits that brand equity represents the added value a brand brings to products, encompassing five dimensions: brand awareness, brand associations, brand loyalty, perceived quality, and other assets, such as patents and channel relationships. This framework can be used to quantify the market value and influence of urban cultural tourism brands. The ecological economics theory lays the foundation for green-oriented evaluation. It emphasizes the coordinated development of economic activities and ecosystems, advocating a three-dimensional perspective of “resources-environment-economy” to measure industrial development quality. The theory opposes short-term benefits achieved at the expense of ecological environments, which aligns closely with the core demands of green development in the cultural tourism industry^[13,14].

The theory of high-quality development provides top-level guidance for the integration of dual orientations. It emphasizes the development philosophy of “innovation, coordination, green, openness, and sharing”, requiring the cultural tourism industry to balance ecological protection during brand building and enhance brand value through greening, achieving the unity of “reasonable quantitative growth” and “effective qualitative improvement”.

3. Establishing an evaluation system for high-quality development of urban cultural tourism industry with dual orientation of “brand + green”

3.1. Design principles of evaluation indicators

3.1.1. Scientific principle

Indicators must closely align with the dual connotation of “brand + green”, based on relevant theoretical designs to ensure clear indicator meanings, accessible data, and standardized calculation methods.

3.1.2. Systematic principle

Cover multiple dimensions such as brand, green, industrial benefits, innovation, and services, comprehensively reflecting the core elements of high-quality development in the cultural tourism industry, avoiding biases from single dimensions.

3.1.3. Operability principle

Indicator data should primarily come from the “China Tourism Statistical Yearbook”, urban statistical bulletins, official data released by cultural tourism departments, and authoritative third-party reports, such as the China Tourism Academy and Meituan Cultural Tourism Consumption Report, ensuring data accessibility and quantifiability.

3.1.4. Differentiation principle

Considering the varying cultural tourism resource endowments of different cities (such as Hangzhou’s ecological resources and Xi’an’s historical and cultural resources), indicator settings balance commonalities and particularities to provide a fair basis for cross-city comparisons^[15–17].

3.2. Evaluation index system framework

Based on the core connotation and theoretical basis of dual orientation and existing research results, an evaluation system consisting of 5 first-level indicators and 18 second-level indicators is constructed as follows (refer **Table 1**)^[18–20].

Table 1. Evaluation system

Primary indicator	Secondary indicators	Indicator Explanation	Data sources
1. Brand Value Dimension	1.1 Brand Asset Size	Number of trademarks related to urban cultural tourism brands and IP licensing revenue	City Cultural and Tourism Bureau report, enterprise annual report
	1.2 Brand communication effectiveness	Social media exposure and positive review ratio for cultural tourism topics	Weibo Index, Meituan/Dianping data
	1.3 Brand Loyalty	Tourist revisit rate and brand recommendation intention (Net Promoter Score, NPS)	Tourist satisfaction survey, China Tourism Academy report
	1.4 Brand Culture	The proportion of intangible cultural heritage incorporated into cultural tourism products and the number of cultural performances	Statistical Bulletin of Municipal Culture and Tourism Bureau
2. Green ecological dimension	2.1 Ecological environment quality	The rate of good air quality and surface water compliance in scenic areas	Bulletin of Municipal Ecology and Environment Bureau
	2.2 Resource carrying capacity	Maximum utilization rate of scenic spot carrying capacity and water resource recycling rate	Environmental Impact Assessment Report of Scenic Area
	2.3 Low-carbon technology applications	Share of new energy in tourism transportation and green building coverage	Report of the Municipal Transportation Bureau and the Housing and Construction Bureau
	2.4 Waste disposal efficiency	Waste sorting rate and sewage treatment rate	Scenic Area Operations Report
3. Industrial benefits	3.1 Economic returns	The proportion of added value in the cultural and tourism industry to GDP and per capita tourism expenditure	Urban Statistical Bulletin, China Tourism Statistical Yearbook
	3.2 Employment promotion capacity	The proportion of employment in the cultural and tourism industry in the total employment	Report of the Municipal Human Resources and Social Security Bureau
	3.3 Green Benefit Transformation	Return on investment and revenue share of eco-tourism in green cultural tourism projects	Enterprise investment report, special statistics of cultural tourism Bureau
4. Innovation-driven dimensions	4.1 Product Innovation Capability	Number of new cultural and tourism products added each year (e.g., immersive experience projects)	Urban Cultural Tourism Bureau project filing data
	4.2 Application of technological innovation	The adoption rate of digital technologies (VR/AR) in cultural tourism applications	Report on technology investment of cultural tourism enterprises
	4.3 Pattern Innovation Level	Number of cultural tourism and industry integration projects (e.g., cultural tourism + agriculture/science and technology)	Urban Industrial Integration Development Report
5. Service quality dimension	5.1 Infrastructure quality	Smart tourism service platform coverage and accessibility infrastructure	Urban Cultural and Tourism Service Quality Report
	5.2 Professional Service Standards	The rate of cultural and tourism practitioners holding certificates and the duration of training	Statistics of employees in the Department of Culture and Tourism
	5.3. Tourist satisfaction	Overall satisfaction score, complaint handling rate	Tourist satisfaction survey, 12301 tourism complaint platform data
	5.4 Green Service Supply	Number of green hotels and coverage of eco-tourism routes	Green Tourism Certification List of the Ministry of Culture and Tourism

3.3. Indicator weighting determination: AHP-entropy combination method

3.3.1. Subjective weighting in analytic hierarchy process (AHP)

To construct the judgment matrix, 15 experts (including scholars in cultural tourism, government officials from cultural tourism departments, and executives from cultural tourism enterprises) were invited to conduct pairwise comparisons of indicator importance using the “1–9 scale method” to form the matrix. Consistency verification was performed by calculating the CR value (Consistency Ratio) to validate the matrix’s coherence, with $CR < 0.1$ indicating satisfactory results to ensure the rationality of subjective weighting. The weights were determined by solving the maximum eigenvalue and eigenvector of the judgment matrix through eigenvalue analysis. The results revealed that among primary indicators: “Brand Value Dimension” (0.25), “Green Ecology Dimension” (0.25), “Industrial Efficiency Dimension” (0.20), “Innovation-Driven Dimension” (0.15), and “Service Quality Dimension” (0.15) all held core positions, reflecting the dual-oriented approach.

3.3.2. Objective weighting by entropy method

Data standardization involves processing raw data from 18 secondary indicators across five sample cities through normalization (using the “maximum method” for positive indicators and the “minimum method” for negative indicators) to eliminate dimensional differences. Entropy values and difference coefficients are calculated. The entropy value of each indicator is determined based on standardized data, where lower entropy values indicate greater informational utility. The difference coefficient is calculated as 1 minus the entropy value. Objective weights are then assigned to indicators using the difference coefficient, with indicators like “low-carbon technology application” and “brand communication effectiveness” receiving higher weights due to their significant sample variations.

3.3.3. Combination weight calculation

The ‘multiplicative synthesis method’ integrates subjective weight ($W1$) and objective weight ($W2$) into a combined weight $W = (W1 \times W2) / \sum (W1 \times W2)$, which not only reflects expert experience but also captures data’s objective patterns, thereby enhancing the scientific validity of the weights.

3.3.4. Construction of comprehensive evaluation model

A comprehensive evaluation model based on the “Linear Weighted Sum Method” was constructed, with the calculation formula as follows: $F = \sum_{i=1}^n \sum_{j=1}^m W_{ij} \times X_{ij}$. Here, F represents the comprehensive score for high-quality development of urban cultural tourism industry, W_{ij} denotes the combined weight of the j -th secondary indicator under the i -th primary indicator, and X_{ij} indicates the standardized data of the j -th secondary indicator under the i -th primary indicator. The parameters are defined as $n = 5$ (number of primary indicators) and m (number of secondary indicators under each primary indicator). Based on the comprehensive score, the development level is categorized into four grades: Excellent ($F \geq 0.8$), Good ($0.6 \leq F < 0.8$), Average ($0.4 \leq F < 0.6$), and Improvement Needed ($F < 0.4$).

4. Empirical analysis: Evaluation and comparison based on 5 typical cities

4.1. Sample selection

Five exemplary cultural and tourism cities, Hangzhou, Kunming, Xiamen, Xi’an, and Qingdao were selected as case studies for the following reasons: These cities exhibit distinct resource endowments: Hangzhou (ecology + culture), Kunming (ecology + wellness), Xiamen (coastal + leisure), Xi’an (history + culture), and Qingdao (coastal + beer culture). Their diverse cultural and tourism profiles make them representative of different regional characteristics.

The dual-track approach has been actively implemented: All five cities have launched cultural tourism IP brands (e.g., Hangzhou’s “Songcheng” and Xi’an’s “Datang Nocturnal City”) alongside green tourism policies (e.g., Xiamen’s “Low-Carbon Tourism City” and Kunming’s “Ecological Tourism Demonstration Zone”), with strong data accessibility.

4.2. Data sources and processing

The data mainly comes from the 2023–2024 “China Tourism Statistical Yearbook”, statistical bulletins of various cities, the “Cultural and Tourism Industry Development Report” officially released by the cultural and tourism bureau, Meituan’s “China Cultural and Tourism Consumption Big Data Report”, data from the China Environmental Monitoring Center, and tourist satisfaction surveys (with a sample size of 1,000 in each city). For some missing data, the “linear interpolation method” was used to supplement, ensuring data integrity.

4.3. Evaluation results and analysis

4.3.1. Comprehensive score ranking and grade division

According to the evaluation model, the comprehensive scores and rankings of the five cities are as follows: Hangzhou (0.82, excellent), Xiamen (0.75, good), Xi’an (0.71, good), Qingdao (0.65, good) and Kunming (0.58, medium).

4.3.2. Score analysis by dimension

(1) Brand value dimension

Xi’an (0.81) > Hangzhou (0.79) > Xiamen (0.70) > Qingdao (0.63) > Kunming (0.52). Xi’an scored highest in brand communication effectiveness and cultural depth, leveraging IPs like “Tang Dynasty Night City” and “Twelve Hours of Chang’an”. Kunming ranked lowest due to ambiguous brand positioning (“Spring City” brand with low cultural-tourism integration).

(2) Green ecology dimension

Hangzhou (0.85) > Xiamen (0.80) > Kunming (0.72) > Qingdao (0.61) > Xi’an (0.58). Hangzhou leads in ecological advantages of West Lake and Xixi Wetland, low-carbon technologies (e.g., electric boats, smart energy-saving attractions), and resource recycling rates. Xi’an’s low green score reflects high tourist density in historic districts and insufficient low-carbon infrastructure.

(3) Industrial benefits dimension

Hangzhou (0.80) > Xiamen (0.73) > Qingdao (0.68) > Xi’an (0.65) > Kunming (0.55). Hangzhou’s cultural-tourism industry contributes 8.2% to GDP (2024), with high ROI for green projects. Kunming’s low score stems from traditional sightseeing products.

(4) Innovation-driven dimension

Hangzhou (0.78) > Xi’an (0.73) > Xiamen (0.69) > Qingdao (0.62) > Kunming (0.51). Hangzhou boasts multiple “Culture–Tourism + Digital” projects (Songcheng VR experience) and “Culture–Tourism + E-commerce” initiatives (live-streaming cultural products). Kunming’s innovation capacity remains weak with limited new cultural offerings. Service quality ranking: Xiamen (0.82) > Hangzhou (0.77) > Qingdao (0.66) > Xi’an (0.63) > Kunming (0.56).

Xiamen’s smart tourism platform has a 95% coverage rate, with 100% prompt complaint resolution. In contrast, Xi’an’s service supply falls short during peak holiday seasons, resulting in lower tourist satisfaction.

4.3.3. Core conclusions

Hangzhou demonstrates a ‘dual synergy and comprehensive leadership’ status, with both its brand strength and green development ranking first. The city excels in industrial efficiency and innovation, serving as a benchmark for the ‘brand + green’ dual orientation. Xi’an, while strong in branding, needs to address its ecological shortcomings. Xiamen, with its outstanding green performance and great brand potential, can further enhance its brand IP.

Qingdao is balanced in all dimensions but lacks obvious advantages, and needs to make breakthroughs in brand differentiation and green technology application; Kunming is at a medium level overall, and brand positioning, innovation ability and industrial benefits need to be improved, which is a key city for dual orientation optimization.

5. Dual-oriented optimization strategies for high-quality development of urban cultural tourism industry: “Brand + green” approach

5.1. Differentiated positioning: Building a “dual characteristics” cultural tourism brand

Xi'an is strengthening its “green cultural brand” by infusing environmental values into historical landmarks. Core attractions like “Tang Dynasty Night City” and “Twelve Hours of Chang'an” now feature low-carbon lighting systems and eco-friendly cultural products, with green operational metrics becoming a key focus in brand promotion. Drawing inspiration from Lingchuan Demonstration Zone's “leading scenic area model”, the city is developing the “Qinling Ecological Cultural Tourism Belt” based on Qinling Mountain conservation. This initiative connects key sites including the Ancient City Wall Greenway and Qujiangchi Ecological Park, creating integrated “historical exploration + ecological education” routes that seamlessly blend cultural heritage with sustainable practices.

Xiamen is upgrading its “Coastal Green Brand” with a core positioning as a “Low-Carbon Tourism City”, continuously refining the “Xiamen Blue·Eco-Tourism” IP system. Drawing inspiration from Hainan's “Traveling with Sports Events” initiative, the city has organized activities like.

Qingdao is redefining its marine eco-branding strategy by moving beyond the conventional “beer culture + coastal tourism” model, establishing a three-dimensional framework that integrates marine ecology, industrial heritage, and leisure resorts. Leveraging ecological assets like Laoshan Mountain and Xuejia Island, the city has developed signature offerings such as “marine ecological research expeditions” and “island restoration study tours”. Inspired by Lingchuan's successful “transportation-tourism integration” approach, Qingdao is upgrading coastal tourism routes to connect industrial heritage sites including the Beer Museum and Textile Valley. This creates distinctive “green transportation + cultural immersion” itineraries, ultimately forging a unique marine cultural tourism brand that stands out in the industry.

Kunming is building its “Spring City Ecological Culture Brand” by integrating the “Spring City” ecological IP with ethnic cultural resources, establishing a brand positioning of “Spring-like All Year Round • Ethnic Charm • Eco-friendly Living”. Drawing inspiration from Hainan's “travel photography + ethnic costume experience” model, the city has set up Yi and Dai ethnic costume experience zones and eco-friendly travel photography spots in core scenic areas like Dianchi Lake and Cuihu Lake. Building on Lingchuan's “festival empowerment” approach, Kunming has upgraded its “Kunming International Tourism Festival” with new segments like the “Spring City Flower Ecology Forum” and “Ethnic Ecological Culture Show”, enhancing the brand's cultural depth and green identity.

5.2. Full-chain innovation: Cultivating a “dual integration” industrial ecosystem

Product innovation and development of green brand formats: Hangzhou can leverage its digital economy advantages to launch “VR eco-educational tours” and “digital cultural heritage preservation experiences” as “culture-tourism + digital + green” products, consolidating its dual leadership advantages. Xi'an could adopt the “ice and snow economy” model from Lingchuan to develop low-carbon winter sports projects in the Qinling region, filling the gap in winter green industry formats. Kunming may follow the “pharmaceutical-tourism integration” approach, collaborating with pharmaceutical companies like Yunnan Baiyao to create a “medicinal plant sightseeing + wellness experience” green industrial chain, thereby enhancing product value-added.

Technological innovation empowers green operations and brand communication: Promoting Hebei's “Green Power Empowerment” and “Low-Carbon Transportation” technologies, the scenic area has fully deployed new energy shuttle buses and photovoltaic power supply systems, transforming carbon emission data into brand communication highlights. Drawing inspiration from Guangzhou Rural Commercial Bank's “Sustainable Development-Linked Financing” model, financial tools incentivize enterprises to upgrade low-carbon facilities such as sewage treatment systems and smart energy management platforms, achieving synergistic enhancement of green technology and brand value.

Innovative models deepen the “Culture + Tourism +” cross-sector integration: Qingdao can leverage the Jiaozhou Bay Bridge to develop a “Marine Culture + Tourism + Highway Economy” corridor, while Xiamen could connect coastal homestays with ecological scenic areas through its Ring Island Road. Inspired by Hainan's “Agriculture + Sports + Culture

+ Tourism + Commerce” model, Kunming could create a full-chain project integrating “Plateau Agriculture Tours + Ethnic Festivals + E-commerce Sales”. Meanwhile, Xi’an could develop an immersive experience cluster combining “Historic Districts + Intangible Cultural Heritage + Eco-friendly Dining”.

5.3. Mechanism reform: Building a “dual synergy” guarantee system

The government has established a cross-departmental “Brand + Green” dual-development task force, modeled after Lingchuan’s “Three Ones” liaison mechanism and its “Weekly Report, Monthly Coordination” system. This initiative coordinates resources from cultural tourism, ecological conservation, and development and reform departments. Special policies have been introduced to provide financial subsidies for green cultural tourism brand development and tax incentives for low-carbon technology adoption. For instance, Xiamen offers brand promotion funding for eco-friendly hotels and scenic areas, while Xi’an provides targeted subsidies for low-carbon renovation projects in historical sites.

Building on Lingchuan’s “Doctoral Service Workstation” and “Industry-Academia-Research Collaboration” models, we establish industry-academia integration mechanisms to jointly develop “Dual-System Talent Training Bases” with cultural tourism enterprises. The program introduces interdisciplinary courses in “Brand Management + Green Governance” to cultivate versatile professionals with brand strategy expertise and ecological conservation awareness. By incorporating real-world project cases and inviting corporate executives and ecological experts into teaching, thus enhance the relevance of talent development programs.

To revitalize urban cultural tourism resources, we will implement market-oriented incentive mechanisms by introducing market-driven operators, adopting Lingchuan’s “investment and operation company + social capital” model. Financial support tools will be innovated by replicating Guangzhou’s “sustainable development-linked syndicated loans” approach, offering interest rate discounts to qualified enterprises to encourage green branding practices. A “Green Cultural Tourism Brand Ranking” will be established, leveraging third-party evaluations to guide market resources toward dual-integration projects.

Establish a three-dimensional supervision framework integrating government oversight, social monitoring, and corporate self-regulation. Drawing inspiration from Hainan Prefecture’s “joint enforcement + public sentiment monitoring” model, this study will rigorously combat ecological destruction and false brand promotion. A dynamic evaluation mechanism will be implemented with regularly updated metrics and weighting, incorporating tourist satisfaction and ecological benefits into performance assessments to drive continuous optimization of the cultivation system.

5.4. Brand communication: Expanding the market impact of “dual value”

Precision dissemination, drawing on Hainan Prefecture’s strategy of “TikTok and Xiaohongshu precision targeting”, pushes green cultural tourism vlogs and brand IP stories to young audiences; for family audiences, focuses on promoting eco-educational tours and family vacation products to enhance dissemination effectiveness. Scenario-based dissemination, referencing Jinyi New District’s experience in creating “pocket parks and sponge communities”, integrates “brand + green” elements into urban public spaces. For example, Xi’an can display “Green Chang’an” themed posters at subway stations, while Xiamen can install eco-education and brand image combination signs along coastal walkways. Collaborative dissemination, replicating Hainan Prefecture’s models of “six-province cultural tourism cooperation” and “Qinghai-Gansu Grand Loop linkage”, promotes the formation of “dual-cultural tourism development alliances” among sample cities to jointly conduct brand promotion activities. Together, they create cross-regional green cultural tourism routes such as the “Hangzhou-Xiamen Coastal Ecological Line” and the “Xi’an-Qingdao Cultural Ecological Line”, achieving synergistic diffusion of brand influence and green value.

6. Conclusions and outlook

6.1. Research conclusions

The dual orientation of “brand + green” serves as the core strategy for urban cultural tourism industries to overcome homogenization and achieve sustainable development. These two elements form a symbiotic relationship where “brand empowerment drives value transformation, while green initiatives solidify development foundations”. Building on theories of brand equity and ecological economics, this study establishes an evaluation system comprising five primary indicators (brand value, green ecology, industrial benefits, innovation-driven growth, service quality) and 18 secondary indicators. Through AHP-entropy method combined with linear weighted summation model, empirical analysis of five representative cities reveals distinct patterns: Hangzhou demonstrates “dual synergy with comprehensive leadership”, Xi’an exhibits “strong branding but weak green initiatives”, Xiamen showcases “excellent green practices with significant brand potential”, Qingdao maintains balanced dimensions but lacks standout features, while Kunming shows overall developmental lag. To address these disparities, optimization strategies should focus on four dimensions, namely the differentiated positioning, full-chain innovation, institutional reform, and brand communication; to provide practical pathways for the integrated development of urban cultural tourism industries.

6.2. Research outlook

While this study has established a dual-oriented evaluation framework and optimization strategies, several areas warrant further exploration. Regarding scope limitations, the current research is confined to five cities. Future work could expand to cities across different administrative tiers and resource types to enhance the generalizability of conclusions. Methodologically, incorporating a coupling coordination model could quantify the synergistic development between brand building and green initiatives. In terms of content, with the advancement of carbon neutrality goals and digital technology evolution, we should further investigate an integrated evaluation system combining “brand + green + digital” elements, along with cultivation pathways for cross-border green cultural tourism brands. These efforts would provide more comprehensive theoretical support for the high-quality development of urban cultural tourism industries.

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