



Multi-Dimensional Evaluation of Urban Tourism Competitiveness: A Case Study of Six Core Districts in City A, China

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Abstract. This study assesses the tourism competitiveness of six central districts in City A, China, using a multi-dimensional framework based on Porter's Diamond Theory. It examines environmental, infrastructural, and artificial (policy/management) dimensions through structured surveys of domestic and international tourists, analyzed via ANOVA and demographic comparisons. Results show uniformly high perceived competitiveness across districts, with no significant differences by age, gender, nationality, or visit frequency. Tourists valued all dimensions equally, indicating a balanced, resilient tourism system. The study offers an empirical model for localized competitiveness assessment and provides strategic insights for regional integration, urban tourism planning, and sustainable governance.

Keywords: Tourism environment, Environmental factors, Artificial conditions

1 Introduction

Urban tourism has become a critical engine for economic revitalization and sustainable development, especially in rapidly urbanizing regions like China. Despite growing attention to destination competitiveness, most studies focus on inter-city comparisons, with limited exploration of intra-urban spatial disparities.

This study investigates the tourism competitiveness of six central districts in City A using an extended Porter's Diamond Model^[1], integrating environmental, infrastructural, and artificial (policy/management) dimensions^[2]. Data were collected via structured questionnaires from domestic and international tourists and analyzed through ANOVA and cross-demographic testing.

The study identifies distinct patterns in tourism appeal and service performance across districts, offering data-driven insights for strategic planning. By incorporating elements of urban ecological transition and digital tourism development, this research contributes a novel intra-city evaluation model. It provides practical recommendations for regional coordination, sustainable tourism governance, and enhancing localized competitiveness in the context of smart city transformation.

2 Methodology

2.1 Research Design

The researcher utilized a descriptive survey design of the quantitative approach to address the issues that have arisen in this study. Quantitative research methods focus on numerical data, which can be transformed into statistical information and utilized to make informed conclusions.

The principal aim of the research was to assess the competitiveness of tourist destinations in Chengdu, China by examining the factors that impact the competitiveness of these six districts in Chengdu. These factors may encompass infrastructure development, natural allure, cultural offerings, and even price competitiveness^[3]. Through the analysis of these variables, a comprehension of the strengths and weaknesses of Chengdu's tourism industry can be attained, potentially leading to recommendations for enhancement. Furthermore, a comparative assessment among the six districts could yield valuable insights into the distinctive features of each district in Chengdu and prospects for differentiation. Identifying unique characteristics that enhance district-level competitiveness of Chengdu tourism can assist policymakers and industry stakeholders in elevating the city's appeal to both domestic and international travelers.

2.2 Sampling and Participants

This study was conducted in the main urban area of Chengdu, China, comprising six administrative districts as defined by the Chengdu Municipal Government. According to official statistics from 2023, the total tourist population across these areas reached approximately 4.09 million, including 888,401 international and 3,203,249 domestic tourists.

To ensure representativeness, a stratified proportionate sampling method was employed based on each district's actual tourist volume. This ensured equitable allocation and minimized sampling bias. The sample included both international and domestic tourists who had stayed at least one night in any of the six districts. Day-trippers and visitors who did not stay overnight in the surveyed districts were excluded to maintain data consistency.

Table 1. Population of the study and the corresponding sample sizes.

District	Population			Sample		
	International Tourists	Domestic Tourists	Total	International Tourists	Domestic Tourists	Total
1	124, 019	466, 551	590, 570	12	44	56
2	112, 215	511, 205	623, 420	10	48	58
3	177, 302	593, 578	770, 880	17	56	73
4	65, 865	373, 230	439, 095	6	35	41
5	161, 344	589, 096	750, 440	15	56	71
6	247, 656	669, 589	917, 245	23	63	86
Total	888, 401	3, 203, 249	4, 091, 650	83	302	385

The initial sample size was calculated using Cochran's formula for an infinite population:

$$n_0 = \frac{Z^2 pq}{e^2}$$

where $Z=1.96$ (for 95% confidence), $p=0.5$ (maximum variability), and $e=0.05$ (margin of error), resulting in $n_0=384.16$.

Considering the finite population of $N=4,091,650$, the adjusted sample size was obtained using the finite population correction:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

After rounding, the final sample size was set at 385, which was proportionally distributed across the six districts by international and domestic tourist ratios (see Table 1).

All participants gave informed consent prior to data collection. The final sample was demographically diverse in terms of nationality, age, gender, and travel behavior, enabling a robust assessment of perceived destination competitiveness.

2.3 Data Collection Instrument

A structured questionnaire was used as the primary data collection instrument in this study. The questionnaire was composed of two sections: Section 1 gathered the respondents' demographic information (e.g., age, gender, nationality, and travel behavior), while Section 2 assessed tourists' perceptions of the competitiveness of six tourist destinations in Chengdu using a 5-point Likert scale, ranging from 1 (Not Competitive) to 5 (Very Highly Competitive). To interpret the mean scores derived from the Likert items, the following classification scale was used, as presented in Table 2.

Table 2. Scale of interpretation used in the study to interpret the respondents’ mean ratings measuring the level of competitiveness of the tourist destinations.

Mean Rating	Degree of Satisfaction
4.20 – 5.00	Very Highly Competitive
3.40 – 4.19	Highly Competitive
2.60 – 3.39	Moderately Competitive
1.80 – 2.59	Slightly Competitive
1.00 - 1.79	Not Competitive

The items in the questionnaire were adapted from previous validated studies. Specifically, the indicators for environmental and artificial conditions were drawn from Woyo and Slabbert (2021)^[4] and Aldossary et al. (2022)^[5]. The questionnaire covered three core competitiveness dimensions aligned with the Porter’s Diamond Model: Environmental Conditions, Basic Conditions, and Artificial Conditions.

Additionally, a focus group discussion was conducted with the directors and officers from the District Sports and Tourism Bureaus. This qualitative supplement provided contextual insights into the challenges and priorities of each district, helping to validate the findings and shape the final strategic recommendations. The engagement with these local stakeholders added depth and practical relevance to the study outcomes.

2.4 Data Analysis Techniques

All collected data were analyzed using IBM SPSS Statistics software. The analysis consisted of both descriptive statistics and inferential methods, primarily Analysis of Variance (ANOVA), to determine the significance of differences in tourist perceptions across the six urban districts.

To assess the internal consistency of the measurement instrument, Cronbach's Alpha coefficients were computed for each of the three competitiveness dimensions: environmental conditions, basic conditions, and artificial conditions. All values exceeded the acceptable threshold of 0.70, indicating good reliability of the scale items. The analysis aimed to reveal patterns in how international and domestic tourists evaluated destination competitiveness, and to examine whether demographic factors (such as nationality, age, and frequency of visit) had any statistically significant effects.

3 Results and Discussion

3.1 Profile of Respondents

Table 3 provides a comprehensive overview of the demographic distribution of respondents, shedding light on the varied characteristics and backgrounds of the individuals surveyed.

Table 3. Distribution of the respondents according to the demographic variable.

Demographic Variable	Category	Frequency	Percentage
a. Age	18-32	103	26.8%
	33-47	84	21.8%
	48-62	84	21.8%
	63 & above	114	29.6%
b. Gender	Male	196	50.9%
	Female	189	49.1%
c. Educational Attainment	High School or lower	25	6.5%
	College level	60	15.6%
	College	162	42.1%
	Master's degree	121	31.4%
	Doctorate degree	17	4.4%
e. Nationality	Chinese	302	78.4%
	Not Chinese	83	21.6%
d. Returning Tourist	No	76	19.7%
	Yes	309	80.3%
e. Type of Tourist	International	83	21.6%
	Domestic	302	78.4%
Total		385	100%

The respondents were categorized into key demographic groups. In terms of age, the largest proportion (29.6%) were aged 63 and above, indicating strong representation from older tourists. Gender distribution was nearly balanced, with 50.9% male and 49.1% female.

Regarding education, 42.1% held a college degree, while only 6.5% had a high school education or lower. Chinese nationals comprised 78.4% of the sample, suggesting a majority domestic perspective.

Notably, 80.3% of respondents were returning tourists, highlighting a high level of visitor loyalty—similar to patterns observed in other destinations such as Lesvos Island (Constantoglou, 2020)^[6]. Lastly, 78.4% of participants were domestic tourists, indicating a predominance of local travel behavior in Chengdu's urban districts.

3.2 Overall Competitiveness Ratings by Tourists

Table 4 summarizes the evaluation of environmental conditions, which received the highest overall mean score. Tourists rated Chengdu's urban districts across three competitiveness dimensions. Environmental conditions received the highest mean score ($M = 3.88$), followed by basic conditions ($M = 3.74$) and artificial conditions ($M = 3.66$). According to the interpretation scale, all dimensions were considered "Highly Competitive", with environmental aspects being the strongest perceived advantage. As noted by Mihalič (2013), environmental resources play a pivotal role in shaping destination appeal and satisfaction^[7]. The lower score for artificial conditions indicates areas for potential improvement in governance, infrastructure, and pricing strategies.

Table 4. Level of competitiveness of the tourist destinations in terms of environmental conditions

Environmental Conditions	Mean	Description
Protection of forests	3.87	Highly Competitive
Wildlife and Ecosystem Protection	3.87	Highly Competitive
Waste disposal planning	3.86	Highly Competitive
Renewable Energy Development	3.85	Highly Competitive
Rehabilitation of Heritage Villages	3.95	Highly Competitive
Overall Mean	3.88	Highly Competitive

4.20 – 5.00 Very Highly Competitive, 3.40 – 4.19 Highly Competitive, 2.60 – 3.39 Moderately Competitive, 1.80 – 2.59 Slightly Competitive, 1.00 - 1.79 Not Competitive
Detailed ratings of basic conditions, including infrastructure, destination quality, and cultural appeal, are presented in Table 5.

Table 5. Level of competitiveness of the tourist destinations in terms of basic conditions.

Basic conditions	Mean	Description
a. Natural attractiveness	3.71	Highly Competitive
Destination’s visual appeal	3.78	Highly Competitive
World-class wildlife resources	3.72	Highly Competitive
Visitor safety	3.71	Highly Competitive
Climate and weather	3.65	Highly Competitive
World-class natural attractions	3.67	Highly Competitive
b. Destination quality	3.78	Highly Competitive
Quality human resources	3.77	Highly Competitive
Tourist receipts as an indicator of destination quality	3.78	Highly Competitive
Ground and airport infrastructure	3.75	Highly Competitive
Quality hotels and tourism facilities	3.82	Highly Competitive
Quality recreational centres	3.75	Highly Competitive
c. Cultural attractiveness	3.83	Highly Competitive
Local cuisine	3.87	Highly Competitive
Destination’s unique history	3.88	Highly Competitive
Museums and monuments	3.77	Highly Competitive
Special events and festivals	3.88	Highly Competitive
Interesting architecture	3.82	Highly Competitive
Destination’s nightlife	3.81	Highly Competitive
Destination’s different cultures	3.77	Highly Competitive
d. Quality human resources	3.74	Highly Competitive
Quality of the educational system	3.74	Highly Competitive
Qualified tourism and hospitality staff	3.75	Highly Competitive
Local availability of specialised research and training	3.78	Highly Competitive
Staff training	3.70	Highly Competitive
e. Tourism infrastructure	3.65	Highly Competitive

Money exchange facilities	3.72	Highly Competitive
Variety of restaurants	3.68	Highly Competitive
Variety of shopping facilities	3.69	Highly Competitive
Efficient tour operators	3.58	Highly Competitive
Quality entertainment facilities	3.65	Highly Competitive
Quality accommodation	3.58	Highly Competitive
Overall Mean	3.74	Highly Competitive

4.20 – 5.00 Very Highly Competitive, 3.40 – 4.19 Highly Competitive, 2.60 – 3.39 Moderately Competitive, 1.80 – 2.59 Slightly Competitive, 1.00 - 1.79 Not Competitive

Indicators under artificial conditions, such as policies, destination management, and price competitiveness, are shown in Table 6.

Table 6. Level of competitiveness of the tourist destinations in terms of artificial conditions.

Artificial Conditions	Mean	Description
a. Politics and policies	3.56	Highly Competitive
Visa policies promote tourism	3.53	Highly Competitive
Destination and attractions accessibility	3.62	Highly Competitive
Political will for building competitive destination brand	3.54	Highly Competitive
Political commitment to the expansion of the tourism industry.	3.57	Highly Competitive
The government tourism committee manages the tourism industry.	3.55	Highly Competitive
b. Destination management	3.68	Highly Competitive
Periodic marketing and brand research	3.63	Highly Competitive
Innovative tourism destination	3.67	Highly Competitive
Destination management organisation's monitoring and evaluation of destination performance	3.72	Highly Competitive
Destination coordination and alliances	3.67	Highly Competitive
Commitment towards the development of a favourable destination brand	3.70	Highly Competitive
Stakeholder accountability	3.67	Highly Competitive
Community support for sustainable tourism	3.66	Highly Competitive
Private sector support	3.73	Highly Competitive
c. Price competitiveness	3.73	Highly Competitive
Tax policies on tourism services	3.68	Highly Competitive
Prevailing economic conditions make Chengdu, China pricing competitive	3.77	Highly Competitive
Cheaper destination pricing compared to the regional destinations	3.72	Highly Competitive
Destination's prices promote long-haul market	3.77	Highly Competitive
Multi-currency makes vacation cheaper	3.73	Highly Competitive
Overall Mean	3.66	Highly Competitive

4.20 – 5.00 Very Highly Competitive, 3.40 – 4.19 Highly Competitive, 2.60 – 3.39 Moderately Competitive, 1.80 – 2.59 Slightly Competitive, 1.00 - 1.79 Not Competitive

3.3 ANOVA: Differences in Perceptions by Demographic Groups

Although competitiveness scores across the six districts were statistically similar, local differentiation remains essential. This is consistent with the challenge described in wine tourism, where subtle regional distinctions shape competitiveness (Sekhniashvili & Bujdosó, 2023) [8].

As shown in Table 7, the p-values across all measured dimensions—Environmental, Basic, and Artificial Conditions—were well above the significance threshold ($p > 0.05$), indicating no statistically significant differences in competitiveness ratings among the six districts. This suggests that tourists perceive a comparable level of appeal across all districts of Chengdu.

Table 7. Level of competitiveness of the tourist destinations across the districts.

Level of Competitive- ness	1	2	3	4	5	6	P- value
A. Environmental Conditions	3.87	4.02	3.82	3.89	3.82	3.86	0.999
B. Basic conditions	3.74	3.76	3.76	3.65	3.77	3.74	0.936
a. Natural attractive- ness	3.75	3.71	3.70	3.49	3.81	3.68	0.496
b. Destination quality	3.81	3.78	3.81	3.80	3.70	3.71	0.703
c. Cultural attractive- ness	3.80	3.97	3.78	3.60	3.92	3.82	0.530
d. Quality human re- sources	3.67	3.62	3.83	3.65	3.70	4.00	0.306
e. Tourism infrastruc- ture	3.65	3.70	3.66	3.70	3.70	3.48	0.778
C. Artificial Condi- tions	3.58	3.67	3.70	3.66	3.66	3.72	0.924
a. Politics and policies	3.38	3.67	3.67	3.59	3.52	3.57	0.664
b. Destination man- agement	3.70	3.75	3.67	3.57	3.67	3.67	0.844
c. Price competitive- ness	3.64	3.58	3.77	3.82	3.78	3.91	0.520

The lack of variation in mean scores supports the conclusion that the city’s tourism offerings are evenly distributed, both in quality and visitor experience. Such uniformity provides a level playing field for stakeholders and emphasizes the importance of localized differentiation strategies to maintain a competitive edge.

The uniformly high competitiveness ratings across all six districts may be attributed to Chengdu's integrated tourism development strategy and equitable resource allocation. The municipal government has implemented standardized tourism infrastructure

upgrades, consistent environmental sustainability measures, and unified marketing campaigns across districts. This level of coordinated planning ensures that no single district falls behind in service quality or tourist appeal. Moreover, Chengdu's emphasis on balanced urban development, as emphasized in the Smart Tourism City initiative, has promoted equal access to cultural, environmental, and infrastructural assets. For stakeholders, this finding implies that inter-district collaboration and shared best practices are central to maintaining the city's overall tourism strength.

3.4 Summary of Key Findings

The analysis revealed that the six urban districts of Chengdu exhibit similar levels of perceived tourism competitiveness, with no statistically significant differences. This suggests that tourists view each district as comparably attractive, offering consistent quality in services, infrastructure, and overall experience.

Distinct features—such as Jinjiang's cultural scene, Qingyang's historical sites, Wuhou's modern facilities, and Chenghua's local markets—collectively enhance Chengdu's appeal as a diverse yet integrated destination.

This finding supports earlier empirical work in Slovenia, where Gomezelj and Mihalic (2008) observed comparable competitiveness among urban regions using multi-model frameworks^[9]. The uniformity in competitiveness reflects balanced urban development and supports Chengdu's positioning as a well-rounded tourism hub. To strengthen differentiation, the proposed three-year action plan recommends emphasizing each district's unique attributes while fostering inter-district collaboration to enhance Chengdu's collective tourism value.

Compared with other major Chinese cities such as Beijing, where intra-urban disparities in tourism competitiveness are evident due to differences in development priorities, resource accessibility, and district-specific functions (Wang & Yang, 2023)^[10], Chengdu demonstrates an unusually balanced pattern across its central districts. While Beijing's core districts such as Dongcheng and Haidian excel due to dense cultural and educational resources, its peripheral districts often lag behind due to insufficient tourism infrastructure and policy support. In contrast, the uniform distribution of competitiveness in Chengdu, supported by data from 385 stratified samples and ANOVA results showing no significant inter-district differences ($p > 0.05$), indicates a more integrated urban planning model. This consistency aligns with the findings of Zhang (2025)^[11], who emphasizes that cities undergoing coordinated innovation and low-carbon transitions tend to achieve more even tourism development, especially in core urban zones. For policymakers, this suggests that promoting citywide transformation strategies—beyond focusing solely on flagship districts—can foster broader urban tourism equilibrium and competitiveness.

4 Conclusion

This study assessed the tourism competitiveness of six urban districts in City A using Porter's Diamond Model. Findings reveal uniformly high competitiveness across

environmental, infrastructural, and artificial dimensions, with no significant demographic differences, indicating a resilient urban tourism structure. The model provides practical insights for localized tourism planning and inter-district coordination. While limited by spatial and seasonal scope, this research offers a replicable framework for competitiveness evaluation. The data were collected in a single period and may not reflect seasonal variations in tourist perceptions or destination performance. While this study adopted a primarily quantitative approach, future research should consider integrating qualitative methods such as stakeholder interviews to uncover contextual factors shaping urban tourism competitiveness. Future studies should adopt dynamic, multi-scalar methods, collecting data across multiple seasons to capture temporal evolution and test the stability of competitiveness patterns. Additionally, expanding the spatial scope to include rural and peri-urban areas would enhance the generalizability of findings and provide more comprehensive policy guidance. This aligns with the global sustainability agenda of the UNWTO, which advocates for strategic tourism planning that supports the Sustainable Development Goals (UNWTO, 2022)^[12].

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