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Visitor Experiences in Urban Night Tourism: Insights from Big Data on Hongyadong, Chongqing

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Abstract

Night tourism is an increasingly prominent component of urban cultural economies, yet the experiential structure of visitors' night-time encounters remains underexplored. This study examines visitor experiences in Hongyadong, a flagship night tourism cluster in Chongqing, China, using large-scale user-generated content from Ctrip. Online reviews posted between 2021 and 2025 were analyzed through a multi-stage text-mining procedure comprising word frequency analysis and co-occurrence mapping in KH Coder, followed by Latent Dirichlet Allocation (LDA) topic modelling in Python. The results reveal nine interrelated experiential themes, encompassing nightscape aesthetics, viewing and photography practices, river-based mobility, local cultural symbolism, food and commercial experiences, service and accessibility, and perceived value. These themes portray urban night tourism as a multisensory and spatially dynamic experience shaped by the interaction of aesthetic appeal, behavioral engagement and operational conditions. The study advances night tourism research by demonstrating the potential of big-data textual approaches and by providing conceptually grounded insights for planning and managing urban night-time environments.

Keywords: night tourism; online review; lda topic modelling; big data analytics

1. Introduction

Night-time tourism has become a rapidly expanding component of urban tourism systems and China's night-time economy. According to the 2024 China Night-time Economy Development Report, domestic night-time tourism expenditure in China is projected to reach RMB 1.91 trillion in 2024, reflecting a 21.7% year on year increase (Ministry of Culture and Tourism of the People's Republic of China, 2024). In parallel, the Ministry of Commerce indicates that more than 60% of total urban consumption occurs at night, suggesting that the night-time economy has shifted from a supplementary leisure activity to a structural driver of domestic demand and urban vitality (Government of the People's Republic of China, 2023). As cities increasingly adopt extended museum hours, night-time cultural programs and optimized public transportation, night tourism has become a strategic arena through which destinations enhance competitiveness, cultural appeal and visitor engagement (Heng et al., 2024; Huang & Wei, 2024; Zhang et al., 2022).

Scholars have long emphasized that night-time environments create sensory, emotional and rhythmic experiences that are fundamentally distinct from daytime tourism (Li et al., 2022; Fang et al., 2024). Brown (2019) argues that nighttime lighting, ambience and changing urban rhythms generate a unique experiential landscape that reshapes how visitors perceive place. Recent studies further highlight the cultural and economic value of night tourism, demonstrating its contributions to urban image construction, spatial vitality and cultural expression (Heng et al., 2024; Jiang et al., 2024; Zhang et al., 2022). At the same time, user generated content has fundamentally reshaped tourism research by providing large scale, naturally occurring records of visitors' perceptions and experiences (Kim et al., 2025; Lee et al., 2025; Zhong et al., 2024). Online reviews have been shown to reveal latent experiential themes, emotional nuances and destination image complexity that traditional survey methods often overlook (Leung & Handler, 2024). Big data driven approaches such as text mining, topic modelling and sentiment analysis are now widely recognized as powerful tools for understanding tourist behaviors and market dynamics (Alaei et al., 2019; Wang et al., 2022; Kwon et al., 2021).

Despite these advances, several important research gaps remain. Many existing studies focus on specific night-time activities such as night markets, food streets or shopping (Chang & Hsieh, 2006; Hsieh & Chang, 2006), while integrated urban night tourism landmarks that combine landscape, commerce, culture, mobility and social interaction have received limited attention. Although user generated content analytics has grown rapidly, relatively few studies systematically use large scale online reviews to construct the experiential dimensions of night tourism, particularly in complex urban settings. And the limited research connects macro level night-time economy policies with micro level visitor experience data, leaving gaps in understanding how flagship nighttime destinations align with national strategies for cultural and tourism consumption. Addressing these gaps requires data driven investigations capable of capturing the complexity of visitors' perceptions in real contexts.

Chongqing provides a particularly compelling setting for examining urban night tourism. National evaluations consistently position the city among China's leading night-time economies, reflecting strong policy support, dense consumption spaces and distinctive nighttime landscapes. Hongyadong, an eleven-story cliffside stilted complex integrating commercial streets, river view platforms and cultural spaces, has been officially designated as a national level night-time cultural and tourism consumption cluster (Chongqing Municipal People's Government, 2024). During the 2025 Spring Festival holiday, Chongqing received more than 33.16 million domestic visitors and generated 26.16 billion RMB in tourism revenue, with Hongyadong alone attracting more than 1.31 million visits and ranking first among 130 monitored scenic areas (Chongqing Municipal People's Government, 2025). Its intense visitation and extensive digital footprint on major travel platforms therefore provide ideal conditions for large scale user generated content analysis.

Therefore, this study utilized a large number of online reviews from Ctrip platform to examine visitor experiences in Hongyadong as a representative model of urban night tourism in China. Specifically, the study aims to identify key experiential dimensions of night tourism through text mining and topic modelling, analyze emotional and satisfaction patterns using sentiment analysis, and discuss the implications for destination management and night-time economy policy. This research advances theoretical understanding of night-time tourism and

provides actionable insights for developing more sustainable and engaging urban night tourism environments. Furthermore, the integration of these analytical methodologies facilitates a comprehensive understanding of visitor perceptions and behavioral trends. This understanding can inform strategic interventions aimed at enhancing service quality in the urban night tourism sector.

2. **Literature Review**

2.1. Night Tourism

Since the early twenty first century, research on night tourism has grown steadily, yet scholars have not reached a unified definition of the term. Existing discussions focus mainly on how to delimit the temporal scope of night and how to define the activities that should be included within night tourism (Song et al., 2020). To address this ambiguity, recent studies have proposed more operational definitions. For example, Huang et al. (2023) define night tourism as any tourism activity that occurs between 6 p.m. and 6 a.m. They consider it an extension and expansion of regular daytime tourism. This time-based definition provides a clear and practical framework for empirical research.

Based on this temporal framework, existing studies explore the value of night tourism at both functional and experiential levels. Functionally, night tourism can extend visitor stay duration and stimulate additional spending on dining, shopping and entertainment, which contributes directly to destination development and local economic growth (Heng et al., 2024; Huang and Wei, 2024; Zhang et al., 2022). At the experiential level, researchers emphasize the distinctive sensory and emotional qualities of night-time environments. Artificial lighting, specific spatial atmospheres and night oriented cultural activities create perceptual and social experiences that differ fundamentally from daytime tourism and form the core attractiveness of night tourism (Fang et al., 2024).

The experiential dimension of night tourism is a recurring theme. Li et al. (2022) focus on creating memorable experiences by enhancing atmosphere, arousal, and pleasure, which are crucial for visitor satisfaction and repeat visitation. Complementing this, Chen et al. (2020)

examine how night tourism experiences influence tourists' emotional connections, brand satisfaction, and loyalty, particularly within cultural heritage contexts, emphasizing the role of experiential quality in fostering long-term engagement. Furthermore, the emotional and sensory aspects of night tourism are explored by Fang et al. (2024), who demonstrate that multi-sensory stimuli and emotional involvement significantly enhance tourists' immersive experiences. Their mixed-method approach reveals that sensory engagement and emotional delight are key drivers of memorable night tourism experiences, suggesting avenues for destination marketers to craft more engaging nocturnal environments. From an experience economy perspective, night tourism can also be viewed as a composite experiential product in which aesthetic, entertainment and cultural components jointly shape visitor satisfaction, a pattern similarly observed in festival and event contexts (Zhong & Jun, 2024). Concentrated night-time crowds may cause noise, safety concerns and traffic congestion, which can create tension between residents and visitors (Son et al., 2023). Intensive lighting and large scale night-time activities can also lead to light pollution and increased energy consumption, which raises concerns regarding environmental sustainability (Gaston et al., 2013).

While prior literature has provided important insights into the definitions, forms, benefits, and governance challenges of night tourism, a notable gap remains in understanding visitor experiences through systematic, data-driven approaches. Most existing studies rely on traditional survey methods, leaving room for more nuanced investigations leveraging behavioral and observational data. Future research would benefit from employing multi-method and big-data analytical frameworks to capture the dynamic, real-time patterns of nighttime behavior, sensory engagement, and spatial usage, thereby offering a more holistic and empirically grounded perspective on night tourism experience.

2.2. Big Data Analytics and Online Review in Tourism

User-generated content (UGC), particularly online reviews, has become one of the most valuable empirical data sources in tourism research. Compared with traditional surveys, online reviews are naturally occurring, large in scale, continuously updated, and rich in emotional and experiential expressions (Kim et al., 2025; Lee et al., 2025; Zhong & Kim, 2025). They capture tourists’ spontaneous narratives, real-time evaluations, and detailed

descriptions of services, environments, atmospheres, and emotions, thereby providing more authentic and fine-grained behavioral insights (Mariani et al., 2019). These advantages enable UGC to complement the limitations of structured questionnaires, which often struggle to capture the subtlety and diversity of real-world visitor experiences (Mehraliyev et al., 2020).

With advancements in big data analytics, techniques such as text mining, sentiment analysis, co-occurrence analysis, semantic network analysis, and machine learning have been widely applied to investigate destination image, visitor satisfaction, service quality, and cultural tourism experiences (Mariani & Baggio, 2022; Zhong et al., 2024). For example, Gaur et al. (2021) demonstrated the effectiveness of machine learning techniques, including natural language processing (NLP), text mining (TM), and sentiment analysis (SA), in analyzing large volumes of online reviews from global hotel chains. Their findings confirmed that review star ratings align closely with sentiment scores derived from review content, highlighting the reliability of online reviews as data sources for assessing customer opinions. Wang et al. (2019) applied an LDA-based text mining approach to over 140,000 Chinese travel blogs to extract destination image dimensions, illustrating how topic modelling can efficiently analyze large-scale UGC beyond traditional survey methods. This approach underscores the growing importance of big data in managing and promoting tourism hotspots.

Other studies further highlight the cognitive and emotional dimensions embedded in online reviews. Bui et al. (2022) developed a holistic big-data framework to measure tourism destination image across popularity, sentiment, time and location using large-scale textual and visual UGC from social media, demonstrating how multimodal analytics can overcome the scalability and bias issues of traditional survey-based approaches. Lee et al. (2025) identify five key post-pandemic destination perception dimensions, namely hospitality, overall impression, epidemic information, travel restrictions and rumor refutation, and show that these perceptions significantly strengthen tourists' destination trust and travel intentions.

Despite the rapid growth of big data research in tourism, large-scale online review analysis remains limited in the context of night tourism. Existing studies primarily focus on general destinations or hotel experiences, with relatively little attention paid to night-time settings characterized by distinctive atmospheres, lighting environments, emotional responses, and

activity patterns. Given the immersive and emotion-rich nature of night tourism, UGC offers a unique opportunity to reveal the underlying experiential dimensions that traditional tools may overlook (Fang et al., 2024). Therefore, incorporating topic modelling and other data-driven methods is essential for systematically identifying the latent experiential themes of night tourism.

2.3. Cognitive Image with Online Reviews

Effective destination marketing requires a clear understanding of tourists' destination image, including its perceived strengths and weaknesses, to enable appropriate market positioning (Chen & Uysal, 2002; Kladou & Mavragani, 2015; Pike & Ryan, 2004). Within the cognitive–affective framework, the cognitive component reflects individuals' knowledge-based beliefs and evaluations of destination attributes, whereas the affective component captures the emotions and feelings associated with the destination (Grimm, 2005; Baruah & Chatterjee, 2024). Accordingly, cognitive destination image is primarily constituted by tourists' perceptions of specific destination attributes, such as attractions, infrastructure, services, and environmental conditions (Basaran, 2016; Echtner & Ritchie, 1993).

Consistent with established tourism experience research that views post-consumption evaluations as a core output of the travel experience, online travel reviews capture tourists' experience-derived assessments and thus provide an appropriate empirical basis for cognitive destination image measurement within the cognitive–affective tradition (Kladou & Mavragani, 2015; Guo & Pesonen, 2022). Online travel reviews have become a central empirical source for examining tourists' cognitive destination image, as they contain detailed evaluations of destination attributes derived from actual travel experiences. Early review-based studies demonstrate that cognitive image dominates tourists' online narratives and can be systematically captured through user-generated content (Kladou & Mavragani, 2015). Building on this foundation, Wang et al. (2021) show that large-scale tourism UGC can be transformed from unstructured texts into structured destination image components using topic modeling, revealing cognitively meaningful, attribute-focused image themes. Extending this line of research, Guo and Pesonen (2022) provide experimental evidence that online travel reviews actively reshape cognitive image, showing that review attributes such as rating

valence and content concreteness significantly influence tourists' cognitive evaluations of destination attributes. Together, these studies establish online reviews not only as reflections of tourists' cognitive image but also as dynamic informational stimuli that continuously modify cognitive destination perceptions.

Building on this literature, this study uses large-scale online reviews to examine how key night tourism experience dimensions are expressed in visitors' narratives. Using a data-driven analysis of salient terms, their co-occurrence patterns, and latent themes, we link prior theoretical insights with empirical evidence to frame the findings that follow.

3. Methodology

3.1. Data Collection

User-generated reviews of Hongyadong were collected from Ctrip.com, one of China's largest online travel platforms. Using the Bazhuayu web-scraping tool, reviews posted between April 14, 2021 and December 2, 2025 were extracted. A total of 2,903 initial entries were obtained. As a first cleaning step, entries with no textual content and near-duplicate statements were removed to reduce redundancy and mitigate potential bias arising from repeated or template-based postings. To align with international text-mining practices and to support English-language construct development, all Chinese reviews were translated using Google Translate. Although machine translation tools (e.g., Google Translate) may introduce translation-related bias, such as the loss of contextual nuance or culturally embedded meanings, they have been widely adopted in tourism research as a practical approach for preserving core semantic and affective content in cross-language text analysis (Gröndahl & Asokan, 2019).

Following translation, reviews were retained only if they contained a star rating and at least five English characters. This criterion was adopted to exclude extremely short or fragmentary texts that lack sufficient semantic content for reliable text-mining analysis. Texts were then normalized to lower case, and an initial stopword list was specified using the Terrier stopwords, which are commonly employed to remove high-frequency function words with limited semantic value in large-scale text analysis. After these procedures, 2,643 valid

reviews remained for analysis. All information used in this study was publicly accessible and did not contain any personally identifiable data.

3.2. Data Analysis

The first analytical step employed KH Coder for descriptive text mining, following big data procedures similar to those used in coastal tourism satisfaction studies. Word frequency analysis was conducted on the cleaned corpus, and a ranked list of high frequency terms was generated. This list was used as a concise lexical summary of visitor discourse and as a reference for subsequent modelling. In addition, co-occurrence analysis was carried out to examine how terms tend to appear together across reviews. A co-occurrence network was constructed in KH Coder to visualize relationships among frequently appearing terms and to assist in understanding lexical structures within the corpus.

The second analytical step used Python to implement a topic modelling pipeline. Texts tokenization was performed with NLTK. Part of speech tagging was applied and only nouns and adjectives were retained in order to focus on evaluative and descriptive content. A unigram vocabulary was constructed using a document-frequency filtering strategy. We first set the minimum document-frequency ratio to 0.015 and applied an upper cutoff at the highest-frequency quantile. If the resulting vocabulary contained fewer than 300 features, we relaxed the thresholds iteratively up to three times by lowering the minimum ratio to 0.002 and increasing the upper cutoff to 0.995, until a sufficiently informative feature set was obtained. In addition, domain-specific high-frequency terms that primarily reflect the destination name or generic spatial references (e.g., 'hongyadong', 'night', 'chongqing', 'view' and 'river') were manually added to the stopword list and excluded from the modelling vocabulary to prevent non-discriminative terms from dominating topic formation and to enhance topic interpretability.

Latent Dirichlet Allocation was implemented in scikit learn with sparse Dirichlet priors to reduce topic overlap. Models were estimated for values of K from 2 to 15. For each K, log likelihood and perplexity were computed, and topic coherence of type c v was calculated when possible, using Gensim. Model selection followed a two-stage procedure in which the five K values with perplexity closest to the global minimum were first identified and then the

K with the highest coherence among these candidates was chosen as the final solution. The final LDA model produced topic word distributions. From which a topic word table and diagnostic plots of perplexity and coherence as functions of K were derived for further interpretation.

4. Results

4.1. Word Frequency Analysis

The analysis of the top 100 frequent terms is presented in Table 1. The word 'night' emerges as the most prominent theme, appearing 1087 times, closely followed by 'hongyadong' (1281) and 'chongqing' (962), reinforcing the destination's strong identity as a nocturnal landmark within the cityscape. This highlights that nightscape appreciation serves as the core of the visitor experience. Frequent mentions of 'view' (903), 'river' (602), and 'light' (429) further indicate that the visual quality of the riverside illumination and the panoramic cityscape are paramount to visitors. Dining and local culture ('food', 'snack', 'hot pot') alongside built environment features ('building', 'bridge', 'stilted') are also central to the experiential narrative.

Notably, terms related to value and atmosphere, such as 'worth' (323), 'unique' (281), 'lively' (83), and 'breathtaking' (73), that emphasize the perceived attractiveness and emotional impact of the destination. The presence of terms like ' crowd' (84), 'road' (154), and 'elevator' (79) points to practical dimensions of the visit, including congestion and mobility, which shape onsite experiences. While the majority of high-frequency terms convey positive appraisal, words such as 'crowded' and structural references like 'road' also reveal contextual challenges within the visitor journey, suggesting opportunities for experience management and spatial optimization.

Table 1. Top 100 frequent words

Words	Freq.	Words	Freq.	Words	Freq.	Words	Freq.
hongyadong	1281	custom	158	riverside	88	history	67
night	1087	money	156	confluence	86	price	67
chongqing	962	fun	154	jiefangbeus	86	cliff	66
view	903	road	154	leisure	86	bustling	65
river	602	hot	152	crowd	84	qianman	65

scenery	448	value	151	lively	83	panoramic	64
light	429	architecture	147	crowded	82	way	64
city	408	boat	129	bank	80	fantastic	63
photo	365	changjiang	118	delicious	80	restaurant	63
tourist	363	convenient	117	perfect	80	scene	62
building	338	local	117	charm	79	service	62
street	338	landmark	115	elevator	79	mountainside	61
worth	323	snack	113	holiday	78	entrance	60
floor	321	spirited	108	cruise	76	magical	60
experience	312	district	106	dazzling	76	interesting	57
unique	281	commercial	105	ticket	76	picture	57
culture	240	feature	105	atmosphere	74	distinctive	55
stilted	235	shop	104	famous	74	sightseeing	55
bridge	230	pot	100	yuzhong	74	transportation	55
mountain	207	ancient	96	breathtaking	73	amazing	53
popular	201	old	95	hongya	73	entertainment	53
folk	192	trip	92	landscape	71	destination	51
food	182	traditional	91	ferry	70	environment	51
must-visit	176	visitor	91	long	69	hour	51
stunning	170	gate	89	style	69	high	50

4.2. Co-Occurrence Network Analysis

Figure 1 illustrates the co-occurrence relationships among high-frequency terms in online reviews, where node size represents term frequency and links indicate co-occurrence strength, highlighting the main lexical clusters underlying visitors' experience descriptions. The network highlights several interconnected components of the Hongyadong night tourism experience. A core cluster of spatial terms such as 'hongyadong', 'night', 'chongqing', 'view' and 'river' reflects visitors' frequent emphasis on the destination and its riverside night scenery. Another prominent cluster links architectural and cultural words including 'stilted', 'street', 'building', 'mountain', 'city', 'culture' and 'old', indicating the importance of the stilted architecture and historical atmosphere. A further group of terms such as 'district', 'gate', 'road', 'riverside' and 'sightseeing' points to walking and viewing activities in the surrounding area, while smaller clusters around 'food', 'delicious', 'value' and 'money' suggest additional concern with food services and value for money. Together, these patterns show that scenery, architecture, movement spaces and ancillary services jointly structure visitor discourse about Hongyadong.

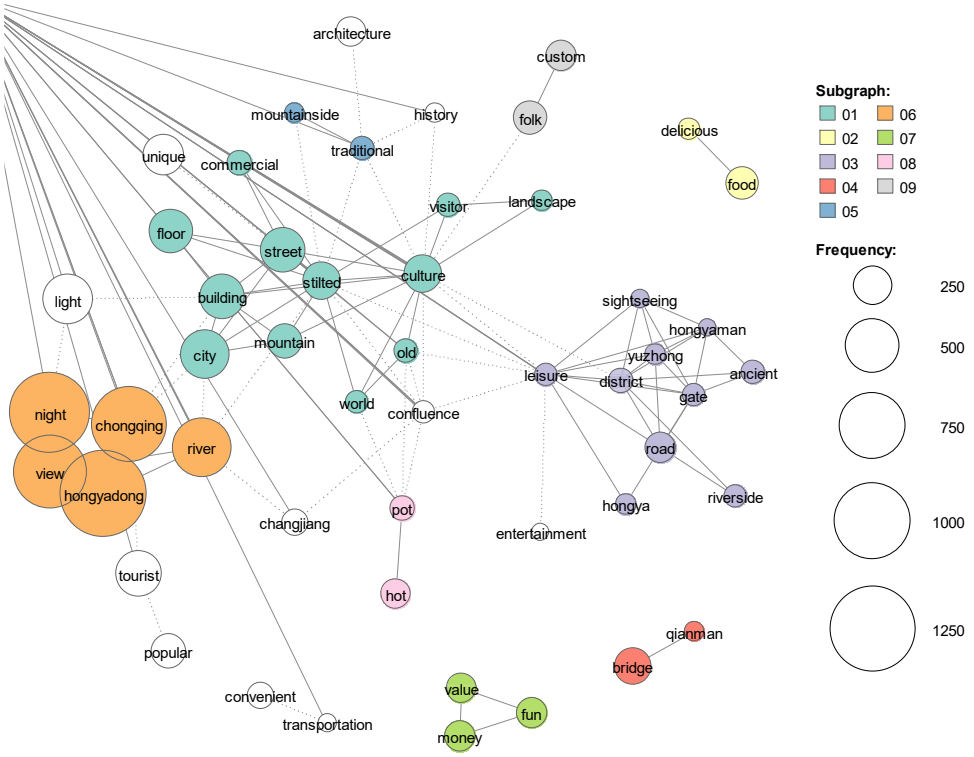

Figure 1. Co-occurrence network words to words.

In Figure 2, nodes labelled 1–5 denote the five review rating categories (i.e., the star-rating levels) used in the dataset. Node degree refers to the number of directly connected neighboring nodes, indicating how many terms co-occur with a given rating category (or how broadly a term is linked across rating categories) in the word–rating network. The network reveals how evaluative ratings are embedded in visitors' narratives through clusters of co-occurring terms. A central group of spatial and experiential terms such as 'night', 'tourist', 'hongyadong' and 'view' forms the largest node set, reflecting frequent references to the destination and its night-time visual appeal. Surrounding this core, another cluster links words such as 'scenery', 'river', 'city', 'popular', 'photo' and 'fun', indicating close lexical associations related to visual enjoyment and general sightseeing.

A further cluster centers on architectural and stylistic terms including 'stilted', 'building', 'street', 'architecture', 'folk' and 'landmark', highlighting the prominence of built environment

elements in visitor narratives. Additional groups include value-related words such as 'worth' and 'money', as well as food and service-related terms such as 'delicious', 'local', 'snack' and 'convenient'. Overall, the network suggests that visitor discourse is organized around four main components: the destination's night setting, scenic and sightseeing elements, architectural features and supplementary aspects such as food and perceived value.

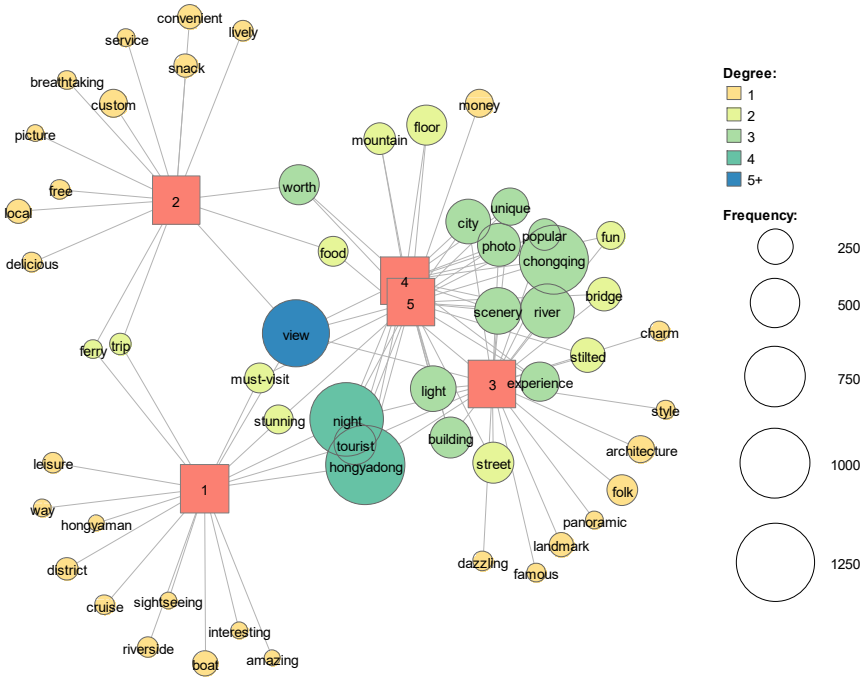

Figure 2. Co-occurrence network analysis words to ratings.

4.3. Topic Modeling Results

The optimal number of topics was determined by jointly examining perplexity and topic coherence across K = 2 – 15. As shown in Figure 3, the perplexity curve reached its lowest values around K = 7 – 10, with a clear minimum at K = 9.

As shown in Figure 4, although coherence peaked at K = 3, but within the perplexity-defined candidate range (K = 7 – 10), K = 9 showed the most stable and comparatively higher coherence. Following the two-step selection rule implemented in the analysis, selecting the

five K values closest to the global minimum of perplexity and choosing the one with the highest coherence. K = 9 was selected as the final model.

Figure 5 visualizes the LDA results using pyLDAvis: the left panel depicts the intertopic distance map indicating topic similarity and distribution, while the right panel lists the top relevant terms characterizing the selected topic, with Topic 1 presented as an example. The pyLDAvis intertopic distance map further supports this choice, as the nine topics exhibit clear dispersion with limited overlap, indicating satisfactory semantic separation. The Top-30 term bar chart shows that Topic 1 is characterized by high-frequency terms such as 'street', 'city', 'building', 'bayu', 'culture', 'road', and 'leisure', confirming the internal coherence of the identified thematic structure.

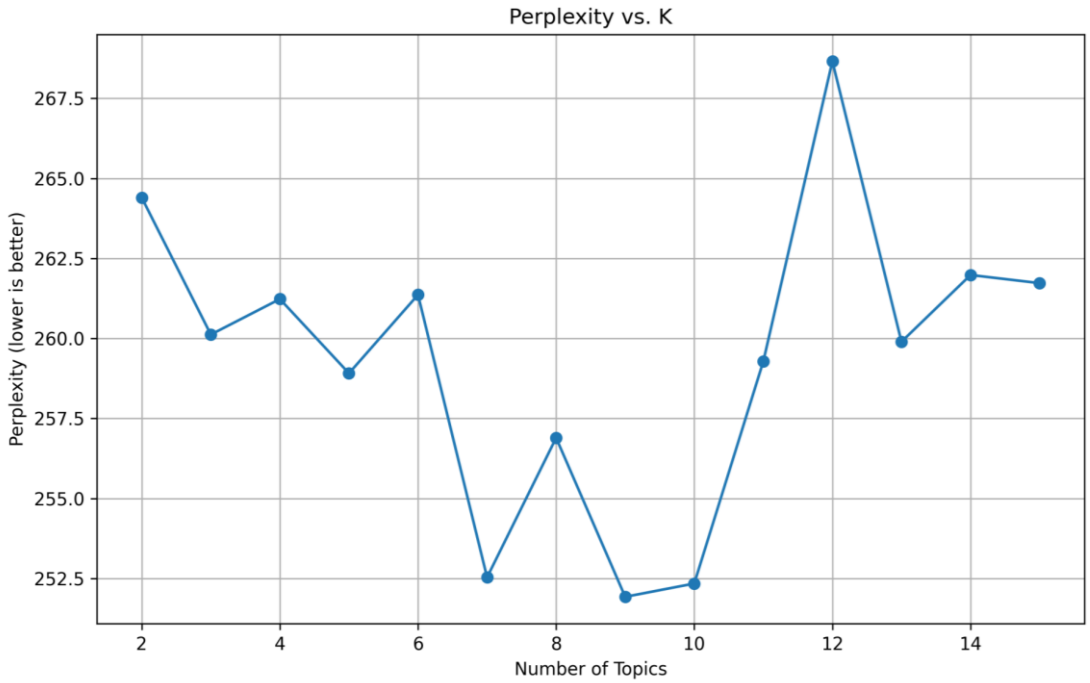

Figure 3. Perplexity graph with topic numbers

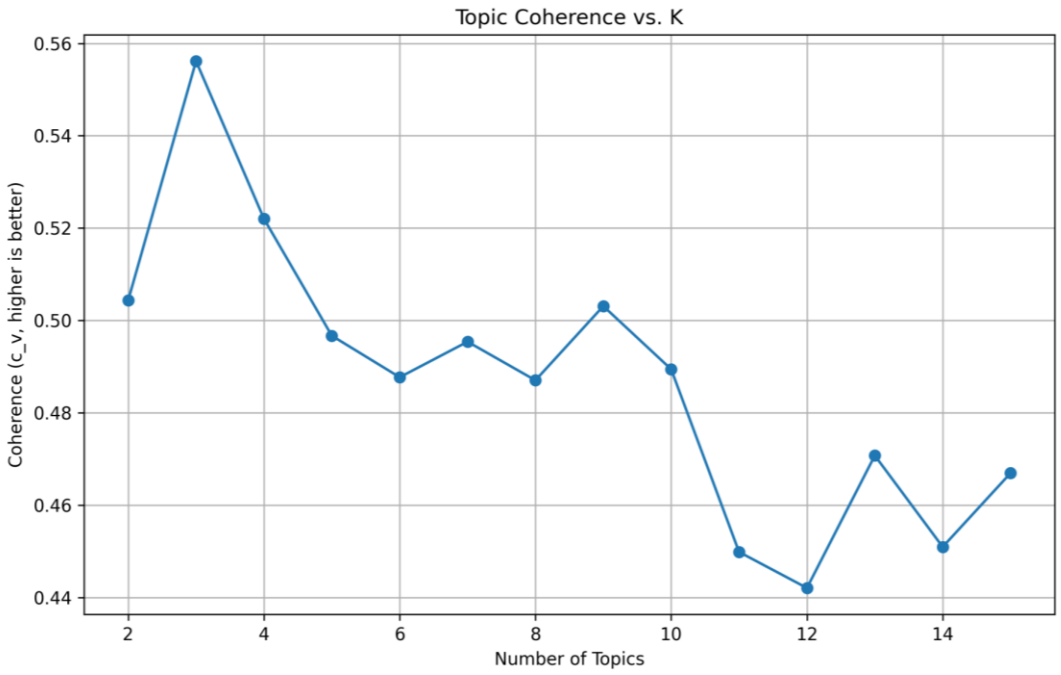

Figure 4. Coherence graph with topic numbers

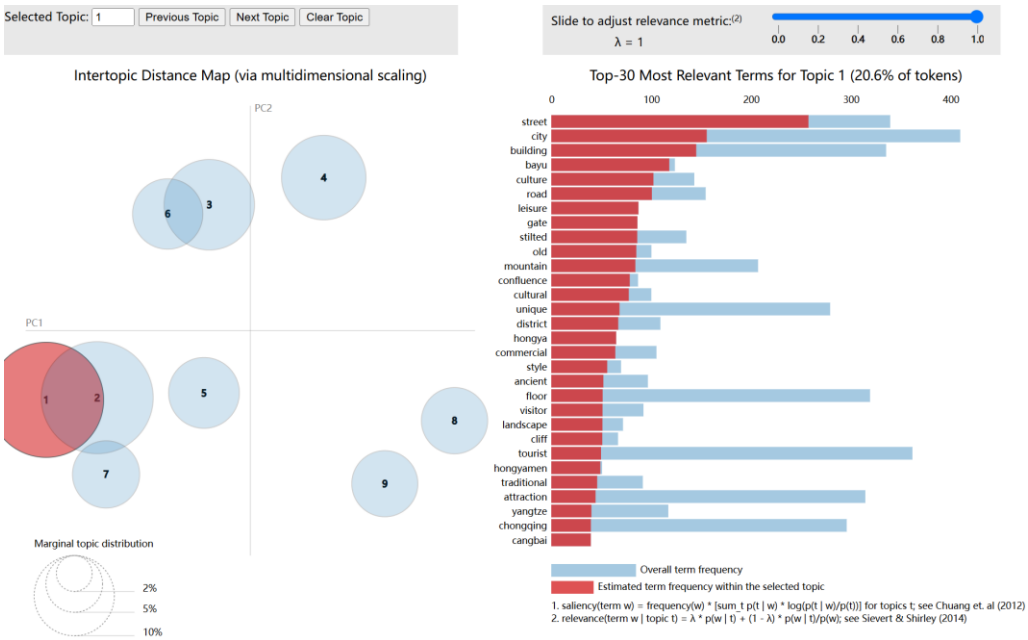

Figure 5. Intertopic distance map (Topic 1 selected)

Figure 5 indicates that some topics (e.g., Topics 1 and 2) occupy adjacent positions in the intertopic distance space, which is expected when themes draw on a shared semantic domain in visitors' narratives. As summarized in Table 2, the model identifies nine interrelated themes that structure perceptions of Hongyadong. Topic 1 (Spatial form and architecture) highlights the built setting and spatial configuration of Hongyadong, as reflected in frequent references to streets, buildings, roads, stilted structures, and district features, indicating that visitors cognitively attend to the site's urban form and architectural identity. Topic 2 (Night city aesthetics) highlights night-time illumination and atmospheric appraisal, as evidenced by recurrent descriptors related to light effects and aesthetic emotions (e.g., light, dazzling, magical, charm), showing that visitors' narratives emphasize the experiential impact of the nocturnal visual ambience. Also, Topic 3 (Viewing spots and photography) highlights the role of specific vantage points such as bridges, upper floors and riverside walkways, showing that panoramic viewing and photo taking are central components of the night tourism experience.

Extending beyond visual appreciation, several themes reflect concrete on site activities and behavioral patterns. Topic 4 (River cruise and mobility) captures the importance of boats, ferries and short river trips on the Yangtze and Jialing rivers in shaping how visitors move through the destination at night. Topic 5 (Food, lighting and crowds) combines references to hotpot, street snacks and lighting design with frequent mentions of crowding, suggesting that distinctive food and night ambience coexist with concerns about congestion. At the same time, Topic 6 (Popularity and social media) points to the influence of online visibility and influencer content, as visitors often frame Hongyadong as a popular internet famous attraction and a must visit site.

The remaining themes focus more on contextual and evaluative aspects that frame the overall experience. Topic 7 (Local culture and landmarks) situates Hongyadong within a wider network of urban symbols such as Jiefangbei, Chaotianmen and surrounding river districts, indicating that tourists connect the site to Chongqing's folk customs and city culture. Topic 8 (Service and accessibility) reflects mixed assessments of transportation, convenience, environmental conditions and service quality, while Topic 9 (Value for money and entertainment) summarizes judgements about prices, snacks, entertainment and overall fun.

Taken together, Topics 1 to 9 suggest that the Hongyadong night tourism experience is shaped by the combined effects of nightscape aesthetics, activity and movement patterns, cultural context, service conditions and perceived value for money.

Table 2. Detected Topics

Topic	Description	Top 10 words	Topic proportion (%)
1	Spatial form and architecture	street, city, building, bayu, culture, road, leisure, gate, stilted, old, mountain, confluence, cultural, unique, district	20.6
2	Night City Aesthetics	light, city, building, mountain, unique, charm, chongqing, experience, world, magical, scene, jialing, stilted, dazzling, traditional	19.5
3	Viewing spots and photography	floor, photo, bridge, light, elevator, road, qianmen, side, street, panoramic, people, riverside, entrance, right, building	12.7
4	River cruise and mobility	people, boat, photo, ticket, ferry, experience, cruise, yangtze, trip, crowd, short, worth, way, tour, ship	11.1
5	Food, lighting and crowds	visit, worth, unique, hot, pot, architecture, stunning, food, distinctive, feature, crowded, lighting, friend, snack, interesting	7.8
6	Popularity and social media	tourist, attraction, popular, famous, photo, online, free, spectacular, destination, chongqing, unique, influencers, visitor, people, summer	7.7
7	Local culture and landmarks	folk, custom, chongqing, landmark, local, jiefangbei, district, jialing, city, building, chaotianmen, yuzhong, yangtze, north, urban	7.0
8	Service and accessibility	great, nice, convenient, experience, trip, environment, bad, service, transportation, location, excellent, fantastic, perfect, amazing, side	6.8
9	Value for money and entertainment	money, value, fun, food, great, delicious, excellent, price, snack, high, variety, super, activity, entertainment, nice	6.8

5. Conclusion

The findings of this study indicate that visitor experiences in Hongyadong are structured around several interrelated dimensions, including nightscape aesthetics, viewing and photography behaviors, river-based mobility, cultural symbolism, service convenience and perceived value. The word frequency patterns highlight dominant perceptual elements, while the co-occurrence structures reveal their relational configurations. The nine LDA topics further consolidate these dispersed elements into coherent experiential themes. Taken together, these results show that nighttime tourism experiences are multifaceted and emerge through

the interaction of sensory, behavioral and contextual components rather than any single determinant.

First, the results emphasize the foundational role of visual and atmospheric stimuli in shaping nighttime experiences. The prominence of nightscape terms (e.g., night, view, river, light, scenery), together with Topic 1 built-environment vocabulary (e.g., street, building, road, stilted, district) and Topic 2 aesthetic descriptors, shows that both the built setting and night-time ambience are central to how visitors describe Hongyadong. This aligns with Li et al. (2022), who highlight atmosphere, arousal and pleasure as essential drivers of memorable night tourism experiences, as well as Fang et al. (2024), who show that multisensory stimulation enhances immersion. The present study advances this perspective by demonstrating how lighting design, topographic features and stilted architecture collectively construct a recognizable nightscape identity that reinforces emotional engagement.

Second, the findings demonstrate that nighttime experiences are highly behavioral and spatial. Frequent mentions of terms such as 'photo', 'bridge', 'floor' and 'boat', alongside the themes on viewing points and river mobility, reveal that visitors actively engage with the environment through repositioning, climbing and moving across spatial layers. Such behavioral patterns reflect broader shifts in contemporary tourism consumption, where image production and spatial exploration are central to experience-making. This is consistent with Leung and Handler (2024), who argue that photography-oriented behavior significantly shapes destination interpretation, and supports Wang et al. (2019), who identify vantage points as crucial symbolic nodes in constructing destination image. The present findings further suggest that Hongyadong's multi-level spatial configuration is particularly conducive to such embodied and dynamic engagement during nighttime visits.

Third, the coexistence of positive emotions and spatial pressures constitutes a notable experiential tension. While numerous reviews use terms such as 'unique', 'stunning' and 'breathtaking' to express aesthetic enjoyment, words such as 'crowd', 'elevator' and 'road' point to congestion, queuing and circulation challenges. These crowding-related issues suggest that peak-hour congestion and vertical circulation bottlenecks (e.g., reliance on elevators and narrow walkways) can undermine comfort and viewing quality. Moreover, the strong salience

of night-time lighting implies sustainability-relevant pressures for management, calling for capacity control, mobility optimization, and energy-efficient, low-impact lighting governance in dense riverside night tourism settings. This pattern echoes Son et al. (2023), who identify experience strain as a common issue in high-density nighttime economic zones, and aligns with Jiang et al. (2024), who emphasize environmental pressure as a critical dimension influencing night-street tourism satisfaction. This study enriches these insights by illustrating how strong aesthetic expectations may coexist with operational bottlenecks, shaping a layered emotional landscape for visitors.

Fourth, social media and digital visibility play a significant role in constructing nighttime tourism experiences. The theme related to online popularity shows that many visitors frame Hongyadong as a 'must-visit' or 'internet-famous' attraction. This finding corresponds with Fang et al. (2024), who link social sharing behaviors with heightened immersion, and Lee et al. (2025), who report that online narratives strongly influence destination impressions. The present study further suggests that nighttime settings may be particularly susceptible to digital amplification due to their dramatic lighting and photogenic qualities, with visitors participating in both the consumption and reproduction of the destination's mediated image.

From a broader perspective, although Hongyadong serves as a specific case, the experiential structure revealed in this study reflects patterns common to urban night tourism districts globally. The combination of aesthetic appreciation, commercial consumption, cultural display and social media engagement mirrors the multifunctional nature of nighttime cultural precincts described by Zhang et al. (2022). The findings also support Heng et al. (2024), who highlight the importance of integrating multiple data sources to understand the spatial and experiential dynamism of nighttime economies. By identifying a multidimensional structure incorporating aesthetic appeal, behavioral engagement, cultural recognition, spatial pressure and digital mediation, this study offers a conceptual lens applicable across other night tourism settings.

Overall, this research demonstrates how large-scale user-generated content can be leveraged to systematically reconstruct complex visitor experience structures. By integrating word frequency analysis, co-occurrence networks and LDA topic modelling, the study provides an

empirically grounded understanding of how visitors perceive and interpret nighttime environments in high-density urban cultural settings. This approach aligns with Mariani and Baggio (2022), who advocate for big-data-driven textual analytics to uncover latent experiential mechanisms, and contributes to the growing methodological movement toward natural-language-based, data-driven interpretations of tourism experiences.

6. **Implications, Limitations and Future Research**

6.1. Theoretical Contributions

This study contributes to the theory of urban night tourism by advancing a configuration-based understanding of visitor experience, rather than reaffirming the presence of commonly acknowledged experiential elements such as scenery, food consumption, or crowding. Although prior studies have demonstrated the importance of atmosphere, arousal, pleasure, and multisensory stimulation in shaping night tourism experiences (Li et al., 2022; Fang et al., 2024), these elements are typically conceptualized as independent experiential attributes and measured using predefined survey scales. Drawing on large-scale user-generated reviews, this study shows that visitors' night-time experiences in an urban tourism cluster are articulated through interrelated experiential dimensions that jointly encompass nightscape aesthetics, spatial practices (e.g., viewing, photography, and movement), cultural referencing, service and accessibility conditions, and value evaluation. Conceptually, this supports a view of urban night tourism experience as a structured experiential configuration, in which experiential evaluation emerges from the co-occurrence of multiple dimensions rather than from isolated factors.

From a theoretical perspective, this configuration-based interpretation refines the experience economy framework by indicating that experiential value in urban night tourism settings is shaped not only by experience-enabling design features, such as illuminated architecture and spatial layout, but also by experience-conditioning operational conditions, including congestion, circulation constraints, and accessibility (Pine & Gilmore, 2011). Rather than treating these conditions as external sources of dissatisfaction, the findings suggest that they

are embedded in visitors' experiential evaluations and form part of how night-time experiences are cognitively assessed in dense urban environments.

Methodologically, the study contributes to theory development by addressing a key limitation of existing night tourism research, which predominantly relies on a priori survey instruments to define experiential dimensions. By employing inductive big-data analytics and topic modelling, this research demonstrates how experiential dimensions can be empirically derived from naturally occurring visitor narratives, enabling theory building that is grounded in actual experience expressions rather than imposed measurement frameworks. This data-driven approach complements established scale-based research and provides a foundation for refining experiential constructs in future confirmatory studies (Mariani & Baggio, 2022; Lee & Park, 2023).

Finally, by situating Hongyadong within the conceptual category of urban night tourism clusters, this study offers a transferable theoretical lens for examining night-time tourism as a form of spatially embedded and experience-intensive urban cultural consumption, with relevance for comparative research across similar night tourism contexts

6.2. Managerial Implications

Managerially and from a policy perspective, the findings offer concrete guidance for the sustainable development of urban night-time tourism economies. For policy makers and urban planners, the prominence of nightscape aesthetics, viewing behavior, and congestion related themes highlights the importance of integrated night-time mobility and crowd management strategies, including extended public transport services, pedestrian flow optimization, and real time congestion monitoring during peak evening hours. In addition, lighting design should be approached as a strategic and sustainability sensitive policy instrument, balancing visual attractiveness with energy efficiency, protection of riverside sightlines, and the mitigation of light pollution in dense urban environments.

For destination managers and site operators, the strong emphasis on viewing spots, photography, and vertical circulation suggests that maintaining elevated viewpoints, optimizing elevator capacity, and improving queue management are essential for stabilizing

visitor experience quality. These operational improvements are particularly important given the coexistence of strong aesthetic appreciation and frequent complaints related to crowding and access constraints identified in the review data. For local businesses, themes related to food quality, perceived value, and entertainment indicate that improving hygiene standards, transparent pricing, and the integration of visible local culture can enhance perceived value while supporting socially sustainable night-time consumption.

For destination marketers and urban analysts, the prominence of social media visibility and internet famous narratives underscores the need for continuous big data monitoring of user generated reviews. Such monitoring can help identify emerging pressure points related to congestion, service dissatisfaction, or expectation gaps, enabling timely interventions and closer alignment between online representations and on-site realities.

From a comparative perspective, although Hongyadong represents a distinctive cliffside and riverfront setting, the experiential structure identified in this study, characterized by visual spectacle, dense visitation, mobility constraints, commercial concentration, and digital amplification, resembles patterns observed in other high density night tourism clusters in China and globally. This comparison suggests that the policy challenges and management strategies identified in this study have broader relevance for urban night-time economy districts seeking to balance experiential quality, visitor satisfaction, and long-term sustainability.

6.3. Limitations and Further Research

While this study provides valuable insights into night tourism, several limitations should be acknowledged. First, it draws on reviews from a single platform, which may not capture all visitor segments; future research could integrate multiple data sources. Second, reliance on machine translation may obscure some linguistic nuances, suggesting value in bilingual or manually validated analyses. Third, the cross-sectional design cannot reveal temporal dynamics in night-time perceptions; longitudinal data would be useful. Fourth, LDA identifies themes but not causal links, so future studies could combine text analytics with surveys or structural models to examine how specific experience dimensions shape satisfaction and behaviors across different night tourism contexts. Finally, this study primarily

aims to identify and structure the attribute-level components of cognitive destination image; therefore, sentiment analysis was not directly integrated with topic modeling at the theme level. Future research could explicitly link topic membership with sentiment or emotion measures (e.g., topic-level sentiment profiling or joint sentiment–topic models) to enrich the affective dimension of urban night tourism experiences.

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References

Alaei, A. R., Becken, S., & Stantic, B. (2019). Sentiment analysis in tourism: capitalizing on big data. *Journal of Travel Research, 58*(2), 175-191. https://doi.org/10.1177/0047287517747753

Baruah, A., & Chatterjee, D. (2024). Cognitive-Affective-Behavioral Themes in Post-Purchase Attitudes Toward Virtual Tourism Experiences: A Mixed-Method Approach. *International Journal of Tourism Research*, *26*(6), e2811. https://doi.org/10.1002/jtr.2811

Basaran, U. (2016). Examining the relationships of cognitive, affective, and conative destination image: A research on Safranbolu, Turkey. *International Business Research, 9*(5), 164-179. https://doi.org/10.5539/ibr.v9n5p164

Brown, G. (2019). *Eventscapes: Transforming place, space and experiences*. Routledge.

Bui, V., Alaei, A. R., Vu, H. Q., Li, G., & Law, R. (2022). Revisiting tourism destination image: A holistic measurement framework using big data. *Journal of Travel Research, 61*(6), 1287-1307. https://doi.org/10.1177/00472875211024749

Chang, J., & Hsieh, A. T. (2006). Leisure motives of eating out in night markets. *Journal of Business Research, 59*(12), 1276-1278. https://doi.org/10.1016/j.jbusres.2006.10.002

Chen, J. S., & Uysal, M. (2002). Market positioning analysis: A hybrid approach. *Annals of Tourism Research, 29*(4), 987-1003. https://doi.org/10.1016/S0160-7383(02)00003-8

Chen, N., Wang, Y., Li, J., Wei, Y., & Yuan, Q. (2020). Examining structural relationships among night tourism experience, lovemarks, brand satisfaction, and brand loyalty on "cultural heritage night" in South Korea. *Sustainability, 12*(17), 6723

Chongqing Municipal People's Government. (2025, February 6). Chongqing's culture and tourism sector welcomes a "good start" with 33.16 million domestic visitors during the Spring Festival holiday [In Chinese]. https://www.cq.gov.cn/zwgk/zfxxgkml/zdlyxxgk/ggwh/ly/zxdt/202502/t20250206_14259890.html.

Chongqing Municipal People's Government. (2024, August 29). No.1! Chongqing tops China's "Top 10 Night-Economy Influence Cities" list for four consecutive years [in Chinese]. https://cq.gov.cn/ywdt/jrcq/202408/t20240829_13567897.html

Echtner, C. M., & Ritchie, J. B. (1993). The measurement of destination image: An empirical assessment. *Journal of Travel Research*, *31*(4), 3-13. https://doi.org/10.1177/004728759303100402

Fang, D., Zhao, Z., & Xiong, C. (2024). What leads to an immersive night tourism experience? The relevance of multi-sensory stimuli, emotional involvement, and delight. *Asia Pacific Journal of Tourism Research, 29*(1), 31-46. https://doi.org/10.1080/10941665.2024.2308853

Gaston, K. J., Bennie, J., Davies, T. W., & Hopkins, J. (2013). The ecological impacts of nighttime light pollution: a mechanistic appraisal. *Biological Reviews, 88*(4), 912-927. https://doi.org/10.1111/brv.12036

Gaur, L., Afaq, A., Solanki, A., Singh, G., Sharma, S., Jhanjhi, N. Z.,. & Le, D. N. (2021). Capitalizing on big data and revolutionary 5G technology: Extracting and visualizing ratings and reviews of global chain hotels. *Computers and Electrical Engineering, 95*, 107374. https://doi.org/10.1016/j.compeleceng.2021.107374

Government of the People's Republic of China. (2023, August 16). *Releasing greater vitality of the night-time economy* [in Chinese]. https://www.gov.cn/yaowen/liebiao/202308/content_6898487.htm.

Grimm, P. E. (2005). Ab components' impact on brand preference. *Journal of Business Research*, *58*(4), 508-517. https://doi.org/10.1016/S0148-2963(03)00141-3

Gröndahl, T., & Asokan, N. (2019). Text analysis in adversarial settings: Does deception leave a stylistic trace?. *ACM Computing Surveys (CSUR), 52*(3), 1-36. https://doi.org/10.1145/3310331

Guo, X., & Pesonen, J. A. (2022). The role of online travel reviews in evolving tourists' perceived destination image. *Scandinavian Journal of Hospitality and Tourism*, *22*(4-5), 372-392. https://doi.org/10.1080/15022250.2022.2112414

Heng, X., Youyin, Z., Wenting, L., & Yunqing, S. (2024). Comprehensive vitality evaluation and spatio-temporal characteristics of nighttime tourism in Shenzhen: An empirical analysis based on multi-source data integration. *Current Issues in Tourism*, 1-28. https://doi.org/10.1080/13683500.2024.2431521

Hsieh, A. T., & Chang, J. (2006). Shopping and tourist night markets in Taiwan. *Tourism Management, 27*(1), 138-145. https://doi.org/10.1016/j.tourman.2004.06.017

Huang, R., Xie, C., Lai, F., Li, X., Wu, G., & Phau, I. (2023). Analysis of the characteristics and causes of night tourism accidents in China based on SNA and QAP methods.

International Journal of Environmental Research and Public Health, 20(3), 2584. https://doi.org/10.3390/ijerph20032584

Huang, T., & Wei, J. (2024). Management strategies for museum night opening in China: a SWOT-TOWS analysis of Shanghai museums. *Cogent Social Sciences, 10*(1), 2327857. https://doi.org/10.1080/23311886.2024.2327857

Jiang, G. X., Li, Y. Q., Ruan, W. Q., & Zhang, S. N. (2024). Night tourscape in streets: Scale development and validation. *Journal of Hospitality and Tourism Management, 61*, 350-360. https://doi.org/10.1016/j.jhtm.2024.12.005

Kim, S., Riswanto, A. L., Sherpa, S., & Kim, H. S. (2025). Generation Z's Michelin Choices: Survey and Big Data Insights Into Thailand's Michelin-Starred Restaurants. *International Journal of Tourism Research, 27*(5), e70135. https://doi.org/10.1002/jtr.70135

Kladou, S., & Mavragani, E. (2015). Assessing destination image: An online marketing approach and the case of TripAdvisor. *Journal of Destination Marketing & Management, 4*(3), 187-193. https://doi.org/10.1016/j.jdmm.2015.04.003

Kwon, H. J., Ban, H. J., Jun, J. K., & Kim, H. S. (2021). Topic modeling and sentiment analysis of online review for airlines. *Information, 12*(2), 78. https://doi.org/10.3390/info12020078

Lee, H. S. K., Wang, J., Moreno-Brito, Y. L., Shen, Y., & Kim, H. S. (2025). Linguistic insights into customer satisfaction: an exploratory analysis of online reviews for gaming destination resorts in Las Vegas. *Journal of Hospitality and Tourism Technology, 16*(1), 73-90. https://doi.org/10.1108/JHTT-05-2023-0147

Lee, J. S., & Park, S. (2023). A cross-cultural anatomy of destination image: An application of mixed-methods of UGC and survey. *Tourism Management*, *98*, 104746. https://doi.org/10.1016/j.tourman.2023.104746

Leung, R., & Handler, I. (2024). Unveiling tourist typology: using online reviews and LDA to understand motivations for visiting Kyoto's prominent temples. *International Journal of Tourism Cities*. https://doi.org/10.1108/IJTC-01-2024-0014

Li, R., Li, Y. Q., Liu, C. H., & Ruan, W. Q. (2022). How to create a memorable night tourism experience: atmosphere, arousal and pleasure. *Current Issues in Tourism, 25*(11), 1817-1834. https://doi.org/10.1080/13683500.2021.1985975

Mariani, M., & Baggio, R. (2022). Big data and analytics in hospitality and tourism: a systematic literature review. *International Journal of Contemporary Hospitality Management, 34*(1), 231-278. https://doi.org/10.1108/IJCHM-03-2021-0301

Mariani, M. M., Borghi, M., & Gretzel, U. (2019). Online reviews: differences by submission device. *Tourism Management, 70*, 295-298. https://doi.org/10.1016/j.tourman.2018.08.022

Mehraliyev, F., Kirilenko, A. P., & Choi, Y. (2020). From measurement scale to sentiment scale: Examining the effect of sensory experiences on online review rating behavior. *Tourism Management, 79*, 104096. https://doi.org/10.1016/j.tourman.2020.104096

Ministry of Culture and Tourism of the People's Republic of China. (2024, December 2). *2024 China night-time economy development report: Domestic night-time tourism expenditure projected to reach RMB 1.91 trillion* [In Chinese]. https://www.mct.gov.cn/whzx/zsdw/zglyyjy/202412/t20241202_956616.html.

Pike, S., & Ryan, C. (2004). Destination positioning analysis through a comparison of cognitive, affective, and conative perceptions. *Journal of Travel Research*, *42*(4), 333-342. https://doi.org/10.1177/0047287504263029

Pine, B. J., & Gilmore, J. H. (2011). *The experience economy*. Harvard Business Press.

Son, N. N., Thu, N. T. P., Dung, N. Q., Huyen, B. T. T., & Xuan, V. N. (2023). Determinants of the sustained development of the night-time economy: The case of Hanoi, capital of Vietnam. *Journal of Risk and Financial Management, 16*(8), 351. https://doi.org/10.3390/jrfm16080351

Song, H., Kim, M., & Park, C. (2020). Temporal distribution as a solution for over-tourism in night tourism: The case of Suwon Hwaseong in South Korea. *Sustainability, 12*(6), 2182. https://doi.org/10.3390/su12062182

Wang, J., Ban, H. J., & Kim, H. S. (2022). Big data and sustainability in the tourism industry. *Sustainability, 14*(13), 7697. https://doi.org/10.3390/su14137697

Wang, J., Li, Y., Wu, B., & Wang, Y. (2021). Tourism destination image based on tourism user generated content on internet. *Tourism Review*, *76*(1), 125-137. https://doi.org/10.1108/TR-04-2019-0132

Wang, R., Hao, J. X., Law, R., & Wang, J. (2019). Examining destination images from travel blogs: A big data analytical approach using latent Dirichlet allocation. *Asia Pacific Journal of Tourism Research, 24*(11), 1092-1107. https://doi.org/10.1080/10941665.2019.1665558

Zhang, R., Chen, S., Xu, S., Law, R., & Zhang, M. (2022). Research on the sustainable development of urban night tourism economy: a case study of shenzhen city. *Frontiers in Sustainable Cities, 4*, 870697. https://doi.org/10.3389/frsc.2022.870697

Zhong, Y., & Kim, H. S. (2025). Understanding Customer Satisfaction in Thailand's Wellness Hotels Post-COVID-19: A Big Data Analytics Approach. *Culinary Science & Hospitality Research, 31*(2), 64-73. https://doi.org/10.20878/cshr.2025.31.2.008

Zhong, Y., & Jun, J. K. (2024). The Effect of Chinese Shunde Food Festival Visitors Experience Economy Factors on Satisfaction: The Moderating Effect of Visiting Experience. *Journal of Industrial Innovation, 40*(1), 36-47. https://doi.org/10.22793/indinn.2024.40.1.004

Zhong, Y., Williady, A., Handani, N. D., & Kim, H. S. (2024). Big Data Insights into Coastal Tourism: Analyzing Customer Satisfaction at Egyptian Red Sea Dive Resorts. *Tourism and Hospitality, 5*(4), 996-1011. https://doi.org/10.3390/tourhosp5040056