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Night Tourism Satisfaction in the Qinghefang Tourism and Leisure Block based on an Improved Kano Model

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Abstract: Night tourism prolongs the activity time of tourism and leisure blocks, while tourism and leisure blocks provide activity places for night tourism. This study introduces the Kano model into the field of satisfaction research, makes improvements according to its advantages and disadvantages, builds an evaluation index system for night tourism satisfaction in tourism and leisure blocks, and combines that system with a questionnaire to determine the priority for optimizing each factor using the main and vice qualities, dispersion degree, and sensitivity comparison analysis. Based on the results, several optimization suggestions are proposed. The results show that: (1) Night tourism in Qinghefang groups mainly involves young people; (2) The overall satisfaction level is relatively high; (3) One attractive factor, seven one-dimensional factors, ten indifference factors, and three reverse factors in four layers (facility, service, experience, and project) were identified; (4) The priority for improvement should be service layer > facility layer > experience layer > project layer; (5) Background music, cultural connotation, festival projects, etc. are favored by visitors; and (6) Transportation, service attitude, and the sense of participation urgently require optimization.

Key words: tourism and leisure blocks; night tourism; satisfaction research; Qinghefang; Kano model

1 Introduction

Night tourism is a form of leisure tourism. It refers to all kinds of tourism and leisure activities that tourists participate in from dinner to bedtime (Yue and Jing, 2013). The concept of night tourism is derived from the British term "the night-time economy" (Zmyslony and Pawlusiński, 2019). At present, research on night tourism mainly focuses on night tourism experiences, night tourism project development, night tourism perception, and social problems caused by night tourism (Evans, 2012; Song et al., 2020). In China, night tourism products, integration of culture and night tourism, and night tourism development strategies receive more attention (Wen, 2007; Cao, 2008; Deng and Guo, 2011; Gu, 2013). Night tourism is beneficial for allowing tourists to make full use of their leisure time, as well as narrowing the differences in the seasonal development of tourist destinations, and promoting the development of urban tourism (Song and Zhao, 2005). Night tourism requires the matching of infrastructure and the creation of the right atmosphere in order to achieve a deep leisure experience (Xiao, 2021). However, traditional urban commercial leisure landscape design and place construction often pay attention to daytime use exclusively, while ignoring the effects at night (Zhang, 2019).

Tourism and leisure blocks are important areas for night tourism. The industry standard of "Classification of Tourism and Leisure Blocks" (LB/T 082-2021) defines them as having distinct cultural themes and regional characteristics, with functions such as tourism and leisure, cultural experi-

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ences, and public services, thereby integrating sightseeing, catering, entertainment, shopping, accommo dation, leisure, and other forms of business. These features can meet the needs of tourists and local residents who wish to visit tourism and leisure areas or use other amenities offered by urban neighborhoods. Based on the time specificity of night tourism and leisure activities, tourism and leisure blocks have become the main places of activity for night tourism (Gu et al., 2016). First, the block is not only a tourism space for tourists but also a living space for the local residents (Chen et al., 2020). Second, cluster and comprehensive consumption is the trend of nighttime economic development (Liu et al., 2021). The blocks are attractive to tourists at night because of the richness of business formats and the aggregation effect of the economic activities. For example, the relatively singular format has been one of the main problems in the development of the Tianjin night economic demonstration block (Zhang and Liu, 2021).

Based on a literature review, tourism and leisure blocks are defined as urban public blocks that can meet the needs of tourists and local residents in terms of life, leisure, tourism, etc., and they are well managed, have diverse formats, and show distinct characteristics. The characteristics that distinguish tourism and leisure blocks from other blocks are threefold. Firstly, tourism and leisure blocks have complete functions, complete facilities, and rich business formats, which can meet the needs of visitors in multiple levels and categories. Secondly, tourism and leisure blocks are urban spaces that can centrally reflect the local culture and characteristics, and showcase the locality of the region. Thirdly, through interactions with people, tourism and leisure blocks create a relaxed, satisfying, and enjoyable experience for people.

From a spatial perspective, the neighborhood is not only the space for tourists, but also a living space for local residents (Chen et al., 2020). In terms of time, night tourism under the changes of day and night combines the unique atmosphere of the night and the leisure attributes of tourism. Due to the unique time and leisure activities of night tourism, the tourism and leisure blocks have become the main venues for night tourism (Gu et al., 2016). Agglomerative and comprehensive consumption is the trend of nighttime economic development (Liu et al., 2021). As open strip spaces, tourism and leisure blocks have a variety of business formats, agglomeration effects of economic activities, and a sense of illusion generated by the implementation of modern technology, so they are attractive to nighttime tourists and make them feel free and relaxed. Night travelers will have special experiences in specific temporal and spatial contexts, so the night tourism in tourism and leisure blocks has certain research significance.

Satisfaction research is of great significance for the development of night tourism and tourism and leisure blocks. Tourist satisfaction refers to the comprehensive evaluation of the degree to which tourists have the needs of their tourism activities met in terms of tourism landscapes, infrastructures, tourism environment, and social services. Tourist satisfaction is the key to understanding tourist destinations and markets (Wan et al., 2004), so it plays an important role in tourist destination management and marketing (Pang and Lu, 2021). In essence, night tourism is a product of the combined effect of demand-driven and competition-driven factors (Wen, 2007). Therefore, satisfaction is of great significance in the development of night tourism and the development of the tourism and leisure blocks in a certain place.

In terms of research methods, most studies on night tourism satisfaction in a certain place are mainly quantitative, and most of them use either the IPA analysis method (Jiang, 2013; Li, 2018; Lu et al., 2019; Tu, 2020; Liang and Cai, 2021), network text analysis method (Sun et al., 2022), or SEM model (Yuan and Chen, 2019; Jin et al., 2021). These models can identify the factors influencing satisfaction and provide guidance for improvement, but they have a common defect in that they cannot rank the factors influencing satisfaction according to the priority of improvement. This study therefore introduces the Kano model for assessing satisfaction factors based on prior research. In terms of evaluation indicators, the main factors used are facilities, services, experience, etc. (Liao, 2020; Deng, 2011). Also note that Liu et al. found that the tourism soundscape in a block has an important impact on satisfaction (Liu et al., 2013; Deng et al., 2014; Liu et al., 2016a), and soundscape and night tourism are the keys to place making, but few studies have combined soundscape with night tourism. Therefore, soundscape is taken as one of the factors in this study.

In summary, tourism and leisure blocks are the key areas of urban tourism, and the changes of day and night make night tourism an important tourism experience period. Satisfaction is an important research content of night tourism in the tourism and leisure blocks. The satisfaction at the small-scale block level mainly focuses on facilities (especially lighting) and services. However, insufficient attention has been paid to the typical nighttime tourism space of tourism and leisure blocks at the larger scale of the urban level.

Therefore, in the context of a specific time (night time) and a specific space (tourism and leisure blocks), by measuring the four levels of facilities, services, experience, and projects, using the Kano model and taking Qinghefang as a case study, the impact index system and corresponding improvement strategies for night tourism satisfaction in the tourism and leisure blocks were finally obtained. This analysis can provide a reference for the high-quality development of night tourism in tourism and leisure blocks and the improvement of urban day and night diversity, so it has a certain theoretical value and practical significance.

2 Methods

2.1 Case selection

Qinghefang in Hangzhou is located in the center of the ruins

of Lin'an City, the capital of the Southern Song Dynasty. The main street is over 1800 m long, and the block covers an area of about 220000 m^2. The block has been prosperous in business since ancient times and has a profound historical background, which fully reflects the culture and folk customs of the Southern Song Dynasty. Qinghefang is typical and representative as a case site for three main reasons. 1) In the existing research, there are few relevant studies on night tourism in Qinghefang. According to the changing trend of tourist consumption, night tourism is of practical significance for improving visitor satisfaction and the quality of night tourism in Qinghefang. 2) Qinghefang has unique historical and cultural value, and it has won more than 10 national-level awards such as "Chinese Historical and Cultural Block", "China Time-honored First Street", "National AAAA-level Scenic Spot", and "The First Batch of National Tourism and Leisure Block". 3) Qinghefang has a certain popularity in tourism due to its outstanding features, abundant business forms, and sound public facilities. It is a relatively famous night tourism consumption gathering area. In the past three years, the block has received an average of more than 28 million visitors a year, with a total annual revenue of 3.03 billion yuan.

2.2 Research model

2.2.1 Kano model

The Kano model was created by Kano Noriaki and collaborators and is mostly used to study customer demand and changing trends (Kano et al., 1984). The Kano model divides customer demand into five categories: Attractive quality, One-dimensional quality, Must-have (must-be) quality, Indifferent quality, and Reverse quality (Fig. 1). The horizontal axis represents the possession of an in-demand item, and the vertical axis represents the subjective satisfaction of visitors. By combining the Kano model with the special qualities of night tourism as shown in Fig. 1, the relationship between the satisfaction and possession of different types of needs can be obtained for each quality category.

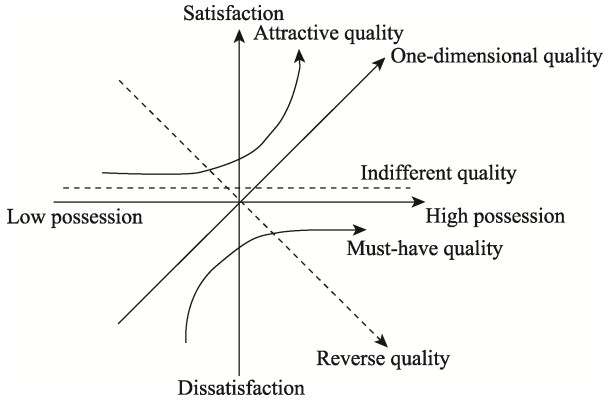

Fig. 1 Kano model

(1) Attractive quality: The higher the possession of such factors, the more satisfied the visitors are; although the lower possession or even lack of such factors will not cause dissatisfaction among the visitors.

(2) One-dimensional quality: The possession of such factors has a proportional impact on satisfaction.

(3) Must-have (must-be) quality: When such factors are possessed, the visitors think those attributes should be like they are.

(4) Indifferent quality: The possession of such factors has little effect on satisfaction.

(5) Reverse quality: The higher the possession of such factors, the more dissatisfied the visitors; while the lower the possession, the more satisfied the visitors are.

2.2.2 Advantages and disadvantages of the Kano model

The advantage of the Kano model is that it can objectively and comprehensively reflect the current satisfaction of visitors, effectively identify the expectations and desires of visitors, and highlight the pain points and itching points for the improvement of visitors' satisfaction and their degree. These advantages provide a "road map" for the design strategy, determining the prioritization of kindness and attention, where attractive qualities emphasize learning the essence from innovation, competitiveness, and product flexibility (Wei, 2006).

The disadvantages are mainly threefold. First, the simple method of taking the maximum value is the only criterion used to determine the factor category (Tang and Long, 2012), but the degree cannot be determined. Second, the importance of several factors cannot be clearly compared in all cases, especially when there are more maxima or the ratios are close (Berger, 1993). Thirdly, the importance of a factor will change with different research objects.

2.2.3 Improvement of the Kano model

Many scholars have tried to improve the Kano model, such as by combining it with AHP (Liu et al., 2016b), QFD (Shi and Han, 2017), or the IPA method (Meng et al., 2014; Huang and Xin, 2017). For example, Chen Bobo proposed the concept of "maximum leading degree" for category determination (Chen et al., 2007).

The reasons for improvement are threefold. 1) The improved version gives full play to the advantages of the Kano model and makes full use of the data obtained from the Kano questionnaire. 2) It makes up for the limitations of the original version, further refining the distinction between similar factors, and increasing the dimension of analysis. 3) It fully fits the characteristics of the research object, making it more suitable for research on the satisfaction of night tourism of the tourism and leisure blocks.

Therefore, three main improvements have been made in this study. 1) The Kano coefficient was introduced to measure the improvement efficiency value of each level in order to determine the improvement order. 2) We introduced the concept of Kano vice quality (i.e., the quality accounting for the second proportion), further increasing the dimensions of

analysis. 3) We introduced variance to analyze the degree of dispersion and consistency, and further explored the degree of dispersion and the reasons behind the factors with inconsistent attitudes.

The improved Kano model can fully utilize its original advantages, make up for its limitations, fully utilize the research data to explore deeper connotations, increase analytical dimensions, and better fit the special properties of the research object. At the same time, this study used the improved Kano model to provide possibilities for applications of tourism research other than satisfaction research.

2.3 Research steps

2.3.1 Questionnaire settings

The questionnaire is composed of three main parts. 1) The first is the characteristics of the respondents. 2) The Kano two-way question is based on the design of the indicator system where the same factor is asked in both positive and negative aspects, i.e., "Are you satisfied with a certain factor?" and "Are you satisfied with a reduction in the factor?". The answer uses a five-point Likert-style scale: "I like this", "It has to be like this", "I do not care", "I can endure this", and "I hate this", corresponding to ratings 5, 4, 3, 2, and 1, respectively. 3) It also includes overall satisfaction, willingness to revisit, word-of-mouth publicity, and open-ended questions.

The index system of this study was obtained (Table 1) through a literature review, field research, and interviews, and on the basis of the existing satisfaction evaluation indicators, with fully consideration of the particularity and restrictive factors of night tourism and tourism and leisure blocks. This index system includes four levels of facilities, services, experiences, and projects, as well as 21 influencing factors, which provides full coverage, and is reasonable and scientific.

2.3.2 Factor quality determination

The respondents' answers to each question have 25 possible outcomes, corresponding to the Kano rating scale (Table 2). A value of Q is a questionable result, such as if the respondent chooses "I like this" or "I hate this" at the same time in the positive and negative questions of the same factor, the result is questionable, and other qualities are analogous. The quality score and classification of each factor are determined based on this, and the quality with the largest proportion is taken as the main quality, whereas the one with the second largest proportion is used as the vice quality.

2.3.3 Factor improvement ranking

Satisfaction sensitivity analysis refers to the calculation and analysis of the satisfaction influence (*SI*) and dissatisfaction

Table 1 Factors influencing night tourism satisfaction in tourism and leisure blocks

Layers	Factors	Description
Facility (A)	A1 Transportation	Convenience, orderliness, and accessibility of transportation
	A2 Lighting brightness	Suitability of light intensity
	A3 Lighting aesthetics	Is the lighting landscape aesthetically pleasing?
	A4 Security	Monitoring, patrol, security, facility maintenance, first aid equipment
	A5 Price level	Prices of items such as products and services
	A6 Guided tour	Accuracy and clarity of indication systems
	A7 Hygiene	Cleanness of roads, scenes, food, etc.
	A8 Rest	Reasonable density of recreational facilities
	A9 Background music	Whether the sound of water, bells, singing and dancing is abundant and suitable
	A10 Noise	Whether the noise is excessive or uncomfortable
Service (B)	B1 Service attitude	Are the service staff polite and attentive?
	B2 Service skills	Are the service staff skilled?
	B3 Complaint handling	Whether a complaint is conveniently resolved; the timeliness and rationality of the resolution
Experience (C)	C1 Local features	Local folk customs
	C2 Crowding degree	Is the ratio of space size to passenger flow reasonable?
	C3 Cultural connotation	Culture in products
	C4 Sense of participation	Whether there are interactive links and participation
Project (D)	D1 Sightseeing projects	Mainly to watch the night city landscape, with a certain natural landscape, strong dependence on lighting and other infrastructure facilities
	D2 Deductive projects	Mainly based on performing arts activities, with a specific stage space, dynamic products with outstanding viewing type, weak participation
	D3 Festival projects	Focus on viewing and cultural experience during traditional festivals
	D4 Experience projects	Personal participation, small-scale, and widely distributed, mainly focusing on tasting snacks, folk experience, shopping, and entertainment

Table 2 Kano evaluation form

Factors		Negative problem				
		I like this	It has to be like this	I do not care	I can endure this	I hate this
Positive problem	I like this	Q	A	A	A	O
	It has to be like this	R	I	I	I	M
	I do not care	R	I	I	I	M
	I can endure this	R	I	I	I	M
	I hate this	R	R	R	R	Q

Note: Q represents questionable answer; R represents reverse quality; I represents in different quality; O represents one dimensional quality; M represents must save (must be) quality; A represents attractive quality.

influence (*DSI*) of each factor in order to obtain the sensitivity of the respondents to any change in the satisfaction of this factor. This information is used to determine the factors that are conducive to improving and enhancing satisfaction and their improvement order. *SI* represents the satisfaction intensity enhanced by improving a factor. The closer the indices of *SI* and *DSI* are to 0, the smaller the influence of the factor on satisfaction. On the contrary, the closer they are to 1, the greater the influence. The formulas for *SI* and *DSI* are as follows:

$$SI = \frac{A+O}{A+O+M+I} \quad (1)$$

$$DSI = -\frac{O+M}{A+O+M+I} \quad (2)$$

where, *SI* is satisfaction influence; *DSI* is dissatisfaction influence; and the *A*, *O*, *M*, and *I* are the scores of Attractive quality, One-dimensional quality, Must-have (must-be) quality and Indifferent quality, respectively.

Taking the *SI* value as the abscissa and the *DSI* value as the ordinate, each factor was then substituted into the sensitivity comparison matrix. At the same time, the zero point in the upper left corner was taken as the origin and the matrix was divided by a quarter arc with a radius of 0.707. The factors on the right side of the arc need to be improved, and the distance from the center of the circle provides a reference for the improvement order of the factors (i.e., the farther away from the center of the circle, the more priority needs to be given to that factor's improvement).

3 Results and analysis

3.1 Demographics

In total, 200 questionnaires were distributed through the field investigation, 183 of which were valid questionnaires, so the effective rate of the questionnaires was 91.5%. Males accounted for 49.18% and females for 50.82%. Visitors between the ages of 18 and 30 were the majority (57.38%), followed by those between 31 and 50 (25.14%), and visitors under the age of 18 or over 50 accounted for smaller proportions (Fig. 2).

The number of students was the largest (42.08%), followed by professionals (teachers, doctors, lawyers, etc.; 16.39%) (Fig. 3).

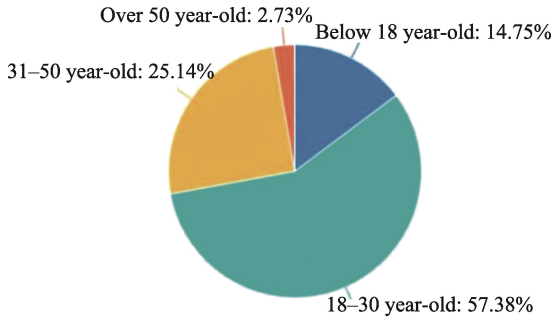

Fig. 2 Age of respondents

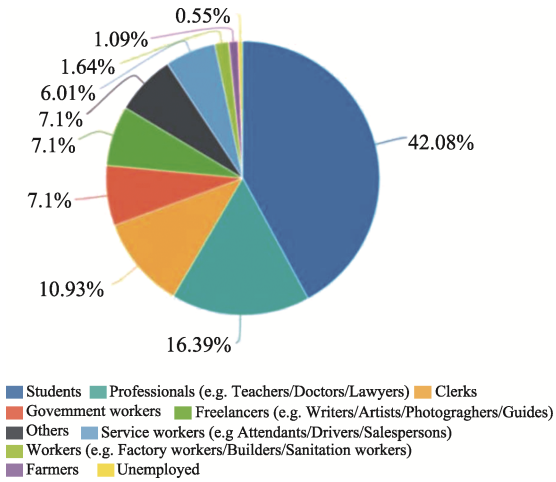

Fig. 3 Occupations of respondents

These data show that 18–30-year-old visitors and school students are the main participants in night tourism in Qinghefang, so the optimizations should focus on their demands and satisfaction.

According to accessibility and convenience, the visitor type (divided into two types of local residents and non-local tourists) was used as the independent variable *X*, night tourism frequency was used as the dependent variable *Y*, and a cross analysis was carried out (Table 3). The proportion of local residents and non-local tourists who have no night tourism experience is the smallest, while the majority of local residents have 1–3 experiences of night tourism, and the majority of non-local tourists have more than three experiences of night tourism. Thus, non-local tourists are more active.

The overall satisfaction of night tourism in Qinghefang

Table 3 Cross analysis of visitor type and night tourism frequency

X/*Y*	None	1–3 times	More than three times	Subtotal (Visitor type)
Local residents	8	21	13	42 (22.95%)
Non-local tourists	12	54	75	141 (77.05%)
Subtotal (Night tourism frequency)	20 (10.93%)	75 (40.98%)	88 (48.09%)	183 (100%)

was 3.67, i.e., the upper-middle level; and the standard deviation was 0.67, indicating that the opinions of visitors are relatively unified. A total of 54.64% of visitors indicated that they may revisit, followed by 16.39% of visitors who were not sure whether they would come again, and nine visitors who thought they would never come again. The overall revisitation rate is at an average level. In terms of word-of-mouth benefits, 51.91% and 16.94% of the visitors indicated they may and will definitely recommend it to others, respectively, while only eight people said they will definitely not recommend it. These figures indicate that night tourism in Qinghefang has a strong word-of-mouth effect and high loyalty, reflecting the high recognition of night tourism in Qinghefang.

3.2 Kano quality analysis

The quality scores of each factor were used to determine its main and vice qualities, and the *SI* and *DSI* indices were calculated to obtain the Kano quality classification of thefactors (Table 4).

3.2.1 Main quality analysis

The data in Table 4 show that the factor with the highest attractive factor is C1 Local Features, and the visitors will feel more satisfied because of the higher degree of possession, and vice versa. There are seven factors with a one-dimensional quality: A1 Transportation, A4 Security, A7 Hygiene, A8 Rest, B1 Service Attitude, B2 Service Skills, and B3 Complaint Handling. The degree of availability of such factors is proportional to satisfaction. There are 10 factors with an indifferent quality: A2 Lighting Brightness, A3 Lighting Aesthetics, A6 Guided Tour, A9 Background Music, C3 Cultural Connotation, C4 Sense of Participation, D1 Sightseeing Projects, D2 Deductive Projects, D3 Festival Projects, and D4 Experience Projects. These factors have little impact on satisfaction. There are three factors with a reverse quality: A5 Price Level, A10 Noise, and C2 Crowding Degree. The higher the availability of these factors, the more dissatisfied the visitors will be.

Table 4 Kano quality classification of factors and quality scores of each factor

Factor	A Attractive	O One-dimensional	M Must-have	I Indifferent	R Reverse	Q Questionable	Main quality	Vice quality	*SI*	*DSI*
A1 Transportation	44	**80**	17	40	0	2	O	A	0.69	−0.54
A2 Lighting brightness	30	37	13	**92**	7	4	I	O	0.39	−0.29
A3 Lighting aesthetics	52	48	12	**69**	0	2	I	A	0.55	−0.33
A4 Security	13	**70**	47	51	0	2	O	I	0.46	−0.65
A5 Price level	4	1	3	34	**140**	1	R	I	0.12	−0.10
A6 Guided tour	47	35	16	**78**	4	3	I	A	0.47	−0.29
A7 Hygiene	17	**88**	24	51	1	2	O	I	0.58	−0.62
A8 Rest	44	**69**	19	49	0	2	O	I	0.62	−0.49
A9 Background music	33	16	6	98	28	2	I	A	0.32	−0.14
A10 Noise	5	2	0	38	**136**	2	R	I	0.16	−0.04
								Average value	**0.51**	**−0.42**
B1 Service attitude	19	**90**	23	**50**	0	1	O	I	0.60	−0.62
B2 Service skills	29	**84**	16	**51**	2	1	O	I	0.63	−0.56
B3 Complaint handling	21	**65**	35	**58**	3	1	O	I	0.48	−0.56
								Average value	**0.57**	**−0.58**
C1 Local features	**61**	**55**	16	49	1	1	A	O	0.64	−0.39
C2 Crowding degree	4	6	2	42	**127**	2	R	I	0.19	−0.15
C3 Cultural connotation	41	**58**	20	**60**	2	2	I	O	0.55	−0.44
C4 Sense of participation	39	**39**	14	**89**	1	1	I	A/O	0.43	−0.29
								Average value	**0.63**	**−0.54**
D1 Sightseeing Projects	49	47	9	**74**	3	1	I	A	0.54	−0.31
D2 Deductive Projects	56	27	7	**89**	3	1	I	A	0.46	−0.19
D3 Festival Projects	44	32	8	**94**	4	1	I	A	0.43	−0.22
D4 Experience Projects	59	34	11	**76**	2	1	I	A	0.52	−0.25
								Average value	**0.49**	**−0.24**

Note: The quality scores of each main quality are marked with bold and underlining, while the vice qualities are marked with just underlining.

We then calculated the factor quality ratio of each layer, and referred to the *K* value proposed by Tan and Shen (Tan, 2000) to assign the Kano coefficients. Note that the value of the attractive factors is greater than 1; the values of the one-dimensional factors and the reverse factors are 1; the value of the must-have factors is *k*, which is taken to be between 0 and 1; and the value of the indifference factors is 0. The improvement efficiency values were calculated as the sum of the product of the proportion of each level and the Kano coefficient, and sorted from large to small. This sequence determined the order of priority improvement, as shown in Table 5. Therefore, the priority order of improvement should be: service layer > facility layer > experience layer > project layer.

Table 5 Proportion of each level and improvement efficiency value

Layer	A (*k*=1.5)	O (*k*=1)	M (*k*=0.5)	I (*k*=0)	R (*k*=1)	Improved efficiency value	Improvement sorting
Facility layer	-	40%	-	40%	20%	0.6	2
Service layer	-	100%	-	-	-	1	1
Experience layer	25%	-	-	50%	25%	0.125	3
Project layer	-	-	-	100%	-	0	4

3.2.2 Vice quality analysis

(1) After introducing vice qualities, the vice quality of C1 Local features of the attractive factor was found to be One-dimensional (A→O). Therefore, attention should be paid to the design and management of the local characteristics of the landscape, atmosphere, and activities of Qinghefang at night.

(2) Most of the vice qualities of the One-dimensional factors are indifferent (O→I), although A1 Transportation is attractive (O→A), indicating that this factor is more of a concern to, and expected by, visitors.

(3) Most of the vice qualities of the indifference factors are attractive qualities (I→A), although the vice qualities of A2 Lighting brightness and C3 Cultural connotation are One-dimensional (I→O), and the vice quality of C4 Sense of participation may develop in two directions: Attractive and One-dimensional (I→A/O).

(4) The vice qualities of the reverse factors are indifferent (R→I), which shows that the reverse factors do not help much in improving satisfaction, and most people hold a disapproval or indifferent attitude towards them because of high prices and noisy environments creating a bad travel experience for visitors.

3.2.3 Dispersion degree analysis

In order to visualize the difference, the variance value and the different quality scores of the same factor were taken as the sample data (after excluding the questionable qualities), and the variances of the quality scores of each factor were obtained (Table 6). The larger the variance value, the higher the degree of dispersion of the factor; and the smaller the variance value, the higher the degree of consistency of the factor.

The factor with the highest degree of consistency is C3 Cultural connotation, followed by B3 Complaint handling and C1 Local features, indicating that visitors have more unified attitudes on these issues. The highest degree of dispersion is A5 Price level, followed by A10 Noise, C2 Crowding degree, etc., and these three factors are also reverse factors, indicating that visitors have inconsistent attitudes towards these factors. The reason may lie in differences in the visitors' acceptance of prices and their psychological perceptions of capacity.

Table 6 Variance values of factor attribute scores

Factor	Variance value	Factor	Variance value
C3 Cultural connotation	499.36	C4 Sense of participation	907.04
B3 Complaint handling	527.84	A2 Lighting brightness	908.56
C1 Local features	555.84	A7 Hygiene	931.76
A8 Rest	581.36	B1 Service attitude	973.04
A6 Guided tour	662	A9 Background music	1043.36
A4 Security	665.36	D2 Deductive projects	1043.84
A3 Lighting aesthetics	672.16	D3 Festival projects	1050.24
D1 Sightseeing projects	710.24	C2 Crowding degree	2279.36
A1 Transportation	734.56	A10 Noise	2683.36
D4 Experience projects	782.64	A5 Price level	2831.44
B2 Service skills	826.64		

3.3 Optimization suggestions

Since factors with reverse qualities have no positive effect on improving satisfaction, the sensitivity comparison matrices of improving satisfaction factors were constructed after removing the reverse factors (Figs. 4–7).

3.3.1 Facility layer

In Fig. 4, the factors on the left side of the arc (A9 Background music, A2 Lighting brightness, A6 Guided tour, and A3 Lighting aesthetics) are those with low sensitivity that need to be maintained. The factors on the right side of the arc are the contents that need to be improved. The arrangement of these factors from farthest to nearest relative to the center of the circle (i.e., the priority order of improvement) is: A1 Transportation, A7 Hygiene, A8 Rest, and A4 Security.

Aesthetically pleasing lighting design is one of the important elements for night tourism landscaping and atmosphere creation. Based on the field research and the answers of open-ended questions, we found that the overall lighting of

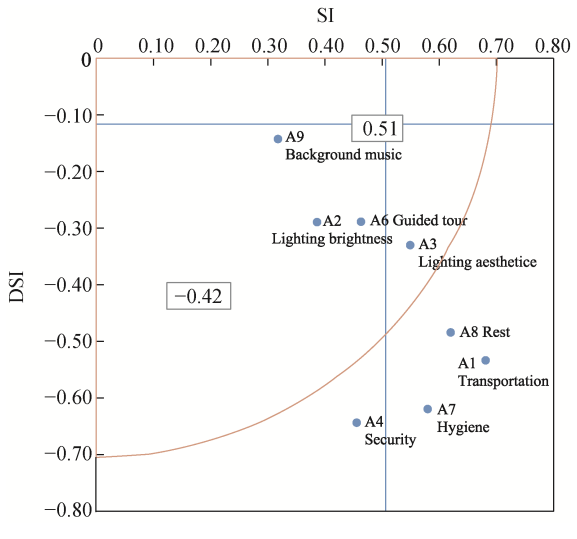

Fig. 4 Sensitivity comparison matrix of the facility layer

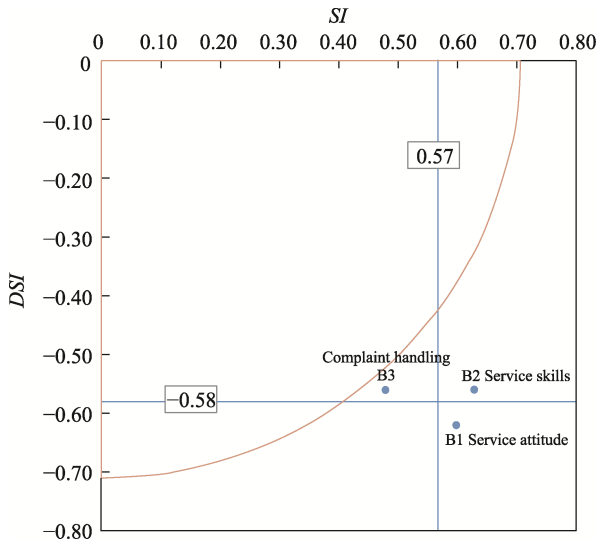

Fig. 5 Sensitivity comparison matrix of the service layer

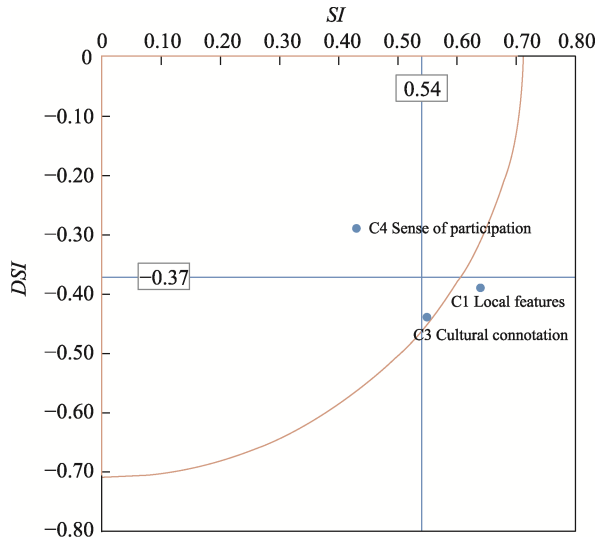

Fig. 6 Sensitivity comparison matrix of the experience layer

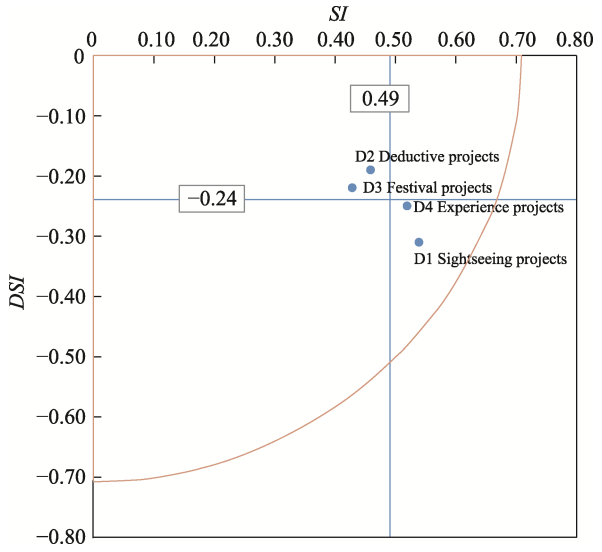

Fig. 7 Sensitivity comparison matrix of the project layer

Hefang Street is brighter than that of Southern Song Imperial Street, but the lighting of Southern Song Imperial Street is more aesthetically pleasing. It is also worth mentioning that Qinghefang upgraded the night scene in order to welcome the Hangzhou Asian Games, including the use of projection lights on the wall and the ground, such as the Asian Games mascot, emblem, and other elements, which showed the Asian Games logo and charm and culture of the Song Dynasty.

Traffic is another likely factor for improving satisfaction. At present, the existing traffic facilities outside the block include a subway station (Ding'an Road Station of Line 1), bus station, large parking lot, and public bicycle spots. The traffic inside the block is mainly pedestrian. The last subway train at Ding'an Road Station arrives at around 23:00, which can meet the needs of most visitors. However, the subway station itself has a small capacity and can be crowded during peak hours, thus affecting the travel experience. The overpasses and tunnels outside the block also cause trouble for some visitors according to the answers of the open-ended questions. Measures such as diverting traffic during peak periods and further improving traffic accessibility can be implemented.

In terms of hygiene, there are five AAA-level public toilets in the block, but some are far from the main street and the lights are dim. The number and placement of trash cans in the block are relatively reasonable. Regular patrols and recycling are conducted at 14:00 and 22:00 every day, the merchants in the block are instructed on how to correctly classify garbage, and a sanitation specialist regularly cleans up the river in the block.

The seating density of Hefang Street is higher than that of Southern Song Imperial Street, but it is still slightly insufficient during the peak period, while the rest facilities of Southern Song Imperial Street are relatively simple, comprising mainly stone piers and roadside stones. Finally, in

terms of security, there are security guards at various intersections in the block, and there are regular patrols to help visitors in a timely manner.

3.3.2 Service layer

The data in Fig. 5 show that among the factors of the service layer, those on the right side of the arc are ranked from farther to nearer the center of the circle in order of priority as: B1 Service attitude, B2 Service skills, and B3 Complaint handling. Night tourism is an important part of the tourism and service industry, and the quality of service personnel plays an important role in satisfaction (Luo, 2021). There are three offline tourism consulting service centers in the block, which are moderate in scale and sound in function, but only operate until 17:00 and do not cover the nighttime. The block regularly conducts relevant activities to understand the demands of merchants and training to improve the service level of merchants and other personnel. Online services are provided through the WeChat official account and app, including style display, neighborhood news, traffic guide, smart customer service, and other features.

3.3.3 Experience layer

The data in Fig. 6 show that among the factors in the experience layer, the two factors on the left side of the arc (C3 Cultural connotation and C4 Sense of participation) are those with low sensitivity to satisfaction which need to be maintained. On the right side of the arc is C1 Local features.

In terms of participation, the block has characteristic businesses such as fashion markets at night, punch-in interactive installations, 24 h business formats, and cultural and art performances. In terms of local characteristics, the block combines Hangzhou city culture and the charm of the Song Dynasty to carry out various ancient rhythm festivals such as Hanfu promotional activities for the Great Cold Festival, Qinghefang Folk Tea Party, Dragon Boat Festival Garden Experience Activities; special cultural activities relying on Hangzhou Confucius Temple and Hangzhou West Lake Sinology Museum, such as Confucius Worship Ceremony, Song School Lecture Hall, Song Ci Reading, Southern Song Taste, Song Dynasty Story, "Song Charm Month", etc.; "Southern Song Dynasty History Research Base" and "Youth Chinese Enlightenment Education Base", which create a traditional culture and modern cultural corridor with Song Dynasty characteristics intertwined with tourism; prayer ceremonies, intangible cultural heritage markets, handicraft experiences, live broadcast shop visits, a "Crossing Together" Chinese costume performance show, the "Huaxizi Locking Love Festival" on the Chinese valentine's day and other activities that combine culture and experience. The development of these distinctive and participatory activities needs to be incorporated into night tourism, in order to reproduce the style of the Southern Song Dynasty in the street markets, while taking into account safety and visibility at night.

3.3.4 Project layer

The data in Fig. 7 show that among the factors at the project level, the factors on the left side of the arc are the ones with low sensitivity that need to be maintained.

There are four main suggestions for improvement. First, nighttime sightseeing projects are inseparable from lighting support. The block has a typical southern architectural style, combining light and shadow technology with white walls and black tiles to create a unique nighttime landscape and atmosphere. Among them, "Hefang Light" on Hefang Street was rated as one of the "Ten Night Scenes of Hangzhou" according to the introduction of the block. Second, the deductive projects in the block include the China Chic music stage and small performances provided by various merchants. The number of performances can be appropriately increased and the prime time for night tourism can be better utilized. Third, festival projects should focus on inheritance and innovation, and strive to develop towards normalization. It is worth mentioning that the 2020 Hangzhou Global Cheongsam Day "Qinghefang" Magic Night Event attracted 243900 offline participants, 15 million online viewers of the live broadcast of the event, and 290 million media viewers. Fourth, the more experiential fixed projects in the block are mainly based on manual experience, but the breadth and depth of experiential projects should continue to be developed, from singular to diverse, and from a simple experience to an immersive one.

4 Discussion and conclusions

4.1 Discussion

Tourism and leisure blocks attract nighttime visitors with their well-established facilities, rich business formats, and unique activities. Night tourism also broadens the time span for the opening of tourism and leisure blocks and provides a unique atmosphere. Night tourism in tourism and leisure blocks is becoming increasingly popular, and plays an important role in urban development and economic recovery in the post-COVID-19 era. Combining actual cases, the main contributions of this study are threefold. 1) This study introduces the Kano model into the field of satisfaction evaluation, focusing on the development of night tourism in Qinghefang, and provides data support for the improvement of its satisfaction. 2) This study improved the Kano model to increase the improvement efficiency value, vice quality, and discrete analysis, further refined the "road map" of satisfaction improvement, which brought it more in line with a real-life situation, and can assist with tourism planning and management applications. 3) As an empirical study, it enriches the application of the Kano model and tourism and leisure block research results in the field of night tourism.

From the research results, this study offers several suggestions for the development and upgrading of night tourism in Hangzhou's tourism and leisure blocks. 1) Improve supporting infrastructure and focus on the night tourism experience. Tourism at night is more uncertain than during daytime, so visitors are more dependent on infrastructure. As

an important place for night tourism, Qinghefang should pay more attention to the availability, convenience, and rationality of relevant supporting facilities at night and provide visitors with thoughtful facilities and services. 2) Highlight the advantages of local resources, and create a characteristic landscape and atmosphere. The unique atmosphere at night is one of the elements that creates a sense of place in the neighborhood. Qinghefang has a strong historical and cultural heritage, as well as the atmosphere of Hangzhou's urban life. This should be used to create a unique night tourism atmosphere. While developing and designing landscapes and activities, the viewing and applicability of the night block system should be considered, in order to balance and maximize economic, environmental, and social benefits. 3) Develop a diversified tourism supply according to the individual needs of visitors. The results of the questionnaire reflect differences in the needs and perceptions among the visitors. Night tourism in the block should take individual needs as the starting point and make targeted renovations and upgrades to improve the quality and satisfaction of the tourist experience. 4) Improve the tourism management system and optimize the tourism management process. By analyzing the factors influencing satisfaction, managers should have a clear understanding of the improvements in night tourism satisfaction in tourism and leisure blocks. In this process, they should collaborate with various stakeholders to establish clear roles and allocate benefits, promote the joint efforts of block managers, government departments, and small and micro operators in the block, and promote the formation of a good operating mechanism for nighttime tourism in the tourism and leisure blocks, in order to ultimately promote the improvement of night tourism satisfaction and vitality in the tourism and leisure blocks.

During the development of tourism and leisure blocks, the problems of night tourism in Qinghefang are not unique. Similar problems have occurred, for example, in Nanjing Mendong Gutong Lane Demonstration Area (Gu et al., 2016), Fuzhou Three Lanes and Seven Alleys (Li, 2018), and Xi'an Grand Tang Mall (Luo, 2021), but the degree in each block is different. For the improvement of night tourism satisfaction in similar tourism and leisure blocks, we should first start from the layers of facilities, services, experiences, and projects, and focus on the creation of the atmosphere while solving physical problems. Second, we should pay attention to the dynamic changes of visitor satisfaction on the time scale and build a benign updating mechanism in time. Finally, we should consider the combination of development and protection, and find a balance between the economic benefits brought by development and the authenticity of protection.

4.2 Conclusions

This study used an improved Kano model to identify the factors influencing night tourism satisfaction in Qinghefang, classified and sorted them according to the priority of improvement, and proposed optimization suggestions for the different layers. The study found that the improved Kano model can be effectively applied to the measurement of tourist satisfaction at night in tourist and leisure blocks, and the influencing factors can be classified and ranked. The six specific conclusions are as follows: 1) Night tourism groups in Qinghefang mainly comprise young people; 2) The overall satisfaction is relatively high; 3) One attractive factor, seven one-dimensional factors, ten indifference factors, and three reverse factors were identified in four layers (facility, service, experience, project); 4) The priority of improvement should be service layer > facility layer > experience layer > project layer; 5) Background music, cultural connotation, festival projects, etc. are favored by visitors; and 6) Transportation, service attitude, and sense of participation urgently require optimization.

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基于 Kano 改进模型的清河坊旅游休闲街区夜间旅游满意度研究

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摘　要：夜间旅游为旅游休闲街区延长活动时间，而旅游休闲街区为夜间旅游提供活动场所。将 Kano 模型引入满意度研究领域，并根据其优缺点做出改进，构建旅游休闲街区夜间旅游满意度的评估指标体系，结合调查问卷进行属性判定，通过主副属性、离散程度以及敏感性比较分析，确定各因子优化的优先顺序并提出优化建议。结果表明：（1）杭州清河坊夜间旅游群体以年轻人为主，总体满意度较高；（2）识别出 1 个魅力因子、7 个期望因子、10 个无差别因子和 3 个逆向因子；（3）改进优先顺序应为服务层>设施层>体验层>项目层；（4）背景音乐、文化内涵、节事类项目等方面更受访客青睐；（5）交通、服务态度和参与感等方面急需优化。

关键词：旅游休闲街区；夜间旅游；满意度研究；清河坊；Kano 模型