

Full Length Research Paper

Tourist Satisfaction survey and analysis on the Dongqian Lake, Ningbo, China

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Abstract

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According to the American Customer Satisfaction Index (ACSI) model, tourist satisfaction evaluation model with six structural variables was built up. The six structural variables were tourists' expectation, perceived quality, perceived value, satisfaction, loyalty and complaint. A random questionnaire survey on the Dongqian Lake tourist attractions was implemented in 2013 based on six structural variables. The overall evaluation of tourist satisfaction is 4.06, which indicates that the respondents are satisfied with the Dongqian Lake scenic area. Tourist loyalty is 3.90 and do not reach the satisfy level. The variables were analyzed by using the Principal Component Analysis (PCA). The results indicated that air quality, noise pollution, ticket price and sanitation were more important variates. Tourists were more satisfied with the scenic area capacity, air quality, noise pollution and sanitation; while they were less satisfied with water quality, convenient traffic, parking, commodity prices and ticket prices. Based on the four-quadrant, some suggestions, such as reconstruct and expand parking area, adjust ticket and goods price, and increase the number of bus etc. were provided to the Management Department of the Dongqian Lake Scenic Area to improve tourist satisfaction and their loyalty so that they are willing revisit the Dongqian Lake.

Keywords: Tourist Satisfaction; ACSI; tourist attractions; Principal Component Analysis; Dongqian Lake

INTRODUCTION

People's requirements for leisure entertainment sites, the services of tourism scenic spots and product quality are higher and higher gradually with the development of economy, as well as increase of personal income and free time, so that the competition in tourism industry is getting intensified. In such a case, how to achieve tourist satisfaction and stay ahead of the competition has become a major issue for the survival and development of tourist attractions, and no doubt, tourists' satisfaction is one of the key factors to obtain success in competition for tourist attractions (Shi, 2011).

Tourist Satisfaction (TS), refers to the psychological gap between tourist perception of tourism activities and their expectations of tourism activities (Fornell et al., 1994). TS is evolved from Customer Satisfaction (CS). Customer satisfaction is the quantitative expression of customer's psychological sense in a specific service

(Peng and Li, 2008). While tourists satisfaction means the assessment given by tourists to overall tourism performances, including the infrastructure, tourism environment and social services, etc. which can meet the needs of tourism activities. Therefore, tourist satisfaction is the best index to illustrate the quality of tourism services and is important to the sustainable development of tourist attractions (He and Xiong, 2008). The earliest research on tourist satisfaction was implemented by Pizam et al. in the 1970s. Pizam et al. (1978) found and proposed a theoretical view that satisfaction can be defined as a result of what tourists expect from tourism products and what they have experienced at the tourism destination, and this theory was widely accepted by Academia. Pizam et al. believed that tourist satisfaction is the comparison resulted from the tourist expectation to the scene and the experience on the spot. If tourist first-

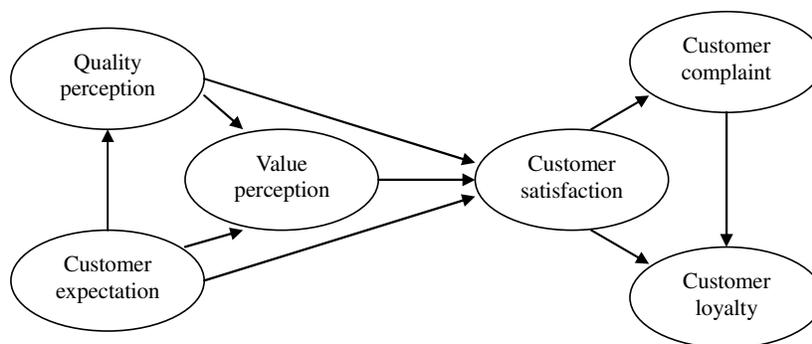


Figure1. Modify model of American Customer Satisfaction Index (Vasilash, 1995)

(Pizam et al., 1978). hand experience is better than prior expectations, then they will be satisfied. Conversely, they will be dissatisfied. The tourist satisfaction studies were begun in China in the late 1980s. However, the research literature is scattered and unbalanced in time, research perspectives and depth (Qu and Jiang, 2012). Till recent years researches on tourist satisfaction are gradually developing in China.

Tourist satisfaction and tourist satisfaction index are two main patterns to express the satisfaction of tourist. Foreign scholars measure tourist satisfaction mainly by building Expectancy Discrepancy Model (Yang, 2012), Service Quality Model (SERVQUAL) (Parasuraman et al., 1988), Service Performance Model (SERVPERF), Cost-harvest Model (EQUILTY), Standard Model (NORM), No Difference Score Model (NDSERQUL) and Importance-Performance Analysis (Xu, 2012). While Domestic scholars study tourist satisfaction mainly by use of the neural network analysis, structural equation model (Deng, 2012), gray correlation analysis, fuzzy comprehensive evaluation (Lian et al., 2012) and factor analysis (Shi, 2013). The achievements on tourist satisfaction index reached by researchers from outside of China are mainly Swedish Customer Satisfaction Barometer (SCSB), American Customer Satisfaction Index Model (ACSI), Norwegian Customer Satisfaction Barometer (NCSB) and European Customer Satisfaction Index (ECSI) (Anderson and Fornell, 2000). The Chinese scholars construct tourist satisfaction index models mostly on the basis of consulting American Customer Satisfaction Index Model (Xia and Wang, 2012).

ACSI is one of the most popular models used to evaluate customer satisfaction towards the product quality and service performance of an enterprise. The ACSI was constructed by national quality research center and the American association of quality and other institutions commissioned by American national economic research association in 1990. The ACSI Model was launched officially in 1994 (Vasilash, 1995) (Figure 1). Tourism is a kind of commercial activity which involves humanity, natural landscape and economic consumption. The customers are the tourists. Therefore

the ACSI Model could be applied for tourists' satisfaction of tourism products and services as well.

The model constructed with 6 structural variables and reveals causal relationship among these structural variables. The 6 structural variables are tourist expectation, perceived quality, value perception, tourist satisfaction, tourist complaints and tourist loyalty. Among 6 structural variables tourists expect, perceived quality and value perception are the input variables of the system, which determine the tourist satisfaction. And tourist satisfaction, tourists complain, tourist loyalty are outcome variables.

According to the actual situation of this study, we made a small adjustment to the American Customer Satisfaction Index Model (Figure 1). In this model, 6 structural variables are displayed in 6 ovals. The arrows indicate the existence of a causal relationship between two structural variables and the arrows point from the cause variable to outcome variables.

There is a positive correlation between tourist satisfaction and the tourist expectation, perceived quality, perceived value, i.e. the higher tourist expectations, perceived quality, and perceived value are, the higher tourist satisfaction is. On the contrary, lower tourist expectations, perceived quality and perceived value illustrate more dissatisfaction of the tourists, thus the satisfaction will be lower. There is a positive correlation between tourist expectations, perceived quality and perceived value. That is to say, the higher expectations are, the better perception will be and vice versa. Perceived quality will affect the value of the tourist perception. That is, the higher quality of tourism products and services are, the higher tourist perception of value will be. On the contrary, tourist perception of value will be lower if quality of tourism products and services become lower, which also indicates a positive correlation between perceived quality and tourist perception of value. And there are positive correlations among these three outcome variables. The improvement of tourist satisfaction could reduce tourist complaints and enhance tourist loyalty (a positive evaluation and excellent public reputation), so that the tourist will re-visit these

Table 1 Correspondence between structural variables and observation variables

Serialnumber	Structural variables	Observation variables Xi
1	Perceived quality	X ₁ : Landscapefeature X ₂ : Tourism capacity X ₃ : Landscapedesign X ₄ : Vegetation X ₅ : Waterquality X ₆ : Airquality X ₇ : Noise X ₈ : Sanitation X ₉ : Safety precaution X ₁₀ : Transportationconvenience X ₁₁ : Parking area X ₁₂ : Guidancesign X ₁₃ : Entertainment X ₁₄ : Quality of aquatic products X ₁₅ : Management
2	Tourist expectations	X ₁₆ : Natural environment expectation X ₁₇ : Social service expectation
3	Perceived Value	X ₁₈ : Ticketprice X ₁₉ : Goods price
4	Tourist satisfaction	X ₂₀ : Global evaluation
5	Tourist complaint	X ₂₁ : Complaint
6	Tourist loyalty	X ₂₂ : Revisit

places. While the decrease of tourists satisfaction will result in tourist complaints (negative evaluation and poor public reputation) or even a legitimate complaint. Therefore, the tourist satisfaction and the tourist complaints are negatively correlated, while the tourist satisfaction and loyalty are positively correlated (Gong, 2010).

Based on the previous researches, Wang et al. (2005) improved and established the customer satisfaction index model of the tourist attractions (TACSI) and model diagram, then put forward the view that the scenic image as external factors affects the tourist expectations of the scenic spot. Tourist expectations have an impact on their perceived quality of the scenic spot. Scenic spot image, tourist expectation and perceived quality impact on the perceived value of tourist to the scenic spot. Tourist perceived value, perceived quality, the scenic spot image affect the tourist satisfaction directly while tourist complaint, loyalty, ideality and overall evaluation express their level of satisfaction. Wang et al. (2005), who referenced to AMSI model, set up an evaluation model of tourist satisfaction index from four tourism activity stages. The four stages were tourist expectation, experience, evaluation and post-tourism. An empirical analysis on Beijing 798 Arts District, which is a typical cultural creative tourism destination, was conducted (Wang et al., 2011). Accepting the core idea of ACSI model, Wang et al. (2012) combined the characteristics of poetry wall in Changde and Liuye Lake scenic area to build up the evaluation model of tourist satisfaction.

The Dongqian Lake, the famous scenic spot in Zhejiang Province, is located in the southeast of Ningbo

City. It is 15 km away from Ningbo city. The Dongqian Lake, as the largest natural freshwater lake in Zhejiang Province processes 45 km perimeter with an area of 22 km². It owns not only historical and cultural relics but also natural scenery as well; therefore it attracts numerous Ningbo citizens and visitors from nearby provinces on weekends and holidays. In accordance with the framework of "lake of city, lake of ecological, lake of cultural, lake of recreation" planned by the local government, it will become a national key ecological tourist resort. During 7-day holiday of the National Day in 2014 (1st Oct. to 7th Oct.) there were more than 230 thousand tourists in the Dongqian Lake (Zhejiang Online, 2014).

In this paper, the specific index of tourist satisfaction was set up to the Dongqian Lake scenic spot based on literature review. The tourist satisfaction was worked out by means of tourist questionnaire and the importance contributed from each index to tourist satisfaction was analyzed by using principal component analysis method. Finally some suggestions were given in order to improve the tourist satisfaction in Dongqian Lake scenic spot.

METHODOLOGY

Construction of tourist satisfaction index model

Based on the ACSI and literatures, the index model of TACSI for the Dongqian Lake was established by taking the characteristics of the scenic spot into consideration. The observation variables corresponding to these 6 structural variables are shown in Table 1.

Data Collection

The questionnaire survey was used for data collection in the study. The questionnaire was designed according to the tourist satisfaction index model and principle of survey (Zheng, 2010; Jian, 2004). It contained following three parts: quotation and acknowledgement, the main part of the questionnaire and individual information of the respondent. The main part of the questionnaire contained: 1) Information of tourists. 2) Tourists satisfaction survey and tourists' satisfaction evaluation to the measurement items (i.e. observation variables) after the visit. Likert Scale was adapted to test and mark: very satisfied (5 points), satisfactory (4 points), general (3 points), not satisfied (2 points), very dissatisfied (1 points). The data obtained were also partitioned different levels based on Likert Scale. It could show tourists' satisfaction if the score reaches over 4 points (Likert, 1932). 3) Related information about the tourist expectation, the tourist complaints and tourist loyalty. The individual characteristics of the surveyed tourists were age, occupation, education level, residential location, and monthly income and so on.

The questionnaire survey was carried out in the autumn of 2013.

Data Processing

The investigation employed the ways of interruptive inquiry, filling in and bringing back questionnaires one to one on scene according to the principle of convenience sampling. Totally 1056 questionnaires were distributed and recovered. The recovery rate was 100%, of which 1025 questionnaires were valid and 31 were invalid. The effective rate was 97%. The data were processed and analyzed by Excel and SPSS 17.

In this study, the reliability of the questionnaire was measured by Alpha Cronbach method, the most commonly used method at present. The coefficient was valued between 0 and 1. The higher the coefficient is, the more reliable the reliability of the questionnaire is (Li, 2007; Mckinney et al., 2002).

RESULTS

Basic information of tourists

The ratio of men and women tourists surveyed was 48.20% to 51.80% which shows that the proportion of male and female responded tourists is almost equal.

In terms of the tourists' age, the proportion of tourists between the ages of 26-35 processes the highest, accounting for 38.54% of the responded tourists; ranking the second are tourists between 18 and 25 years old, accounting for 31.41%; the ratio of tourists between 36-45

years old is in third place, taking up 19.71%. Came in fourth and fifth are the age group above 56 years old and between 46 and 55 years old, which accounts for 5.56 percent and 4.78 percent respectively. This can mean that young and middle-aged visitors are the main tourist groups in Dongqian Lake tourist area. The most tourists were coming from the centre areas of Ningbo, accounting for 46.93% of the responded tourists, which had already closed to half of the number of tourists being investigated, followed by 23.02% tourists from outside of Zhejiang Province. The number of the enterprise worker makes up 42.34% of responded tourists, ranking in the first place in terms of tourists profession. The second and the third are students and self-employed, accounting for 14.73% and 14.34% respectively. Staff of public service consisted of 11.51%, ranking the fourth (Table 2).

Statistics description about the main part of the questionnaire

Data from 1025 questionnaires were used to deal with the variables involved in the TACSI models. Mean satisfaction and standard deviation of each variable were calculated respectively, and the results are listed in Table 3.

The mean of each variable in Table3 represents average evaluation level given by responded tourist visited the Dongqian Lake. The higher the mean is, the better the tourist evaluation of the indicator is. On the contrary, it indicates the responded tourist evaluated worse the indicators worse. A smaller the value of standard deviation illustrates a consistent opinion of tourists on the indicator; on the other hand, it indicates disagreement. It can be seen from Table 3 that the mean value of air quality and vegetation are the higher with 4.38 and 4.35 respectively. The mean value of the lowest is tourist complaint and the value is 1.73. This shows that rarely tourists make complain to the management departments. It also indirectly reflects that the responded tourists are satisfied to the Dongqian Lake tourist area overall. The results also show that the mean value of overall evaluation of tourist satisfaction variables is 4.06, belonging to the satisfactory.

The mean value of the natural environment and social services in tourist expectation are 4.16 and 4.05 respectively, both of them belong to the satisfactory. It demonstrates that responded tourist have a relatively high expectations to the Dongqian Lake tourist area.

As to the perceived quality, the mean value of the air quality and vegetation are the higher, and the values are 4.38 and 4.35 respectively. The minimum mean of 3.75 refers to entertainment items. And the mean value of other indicators, such as water quality (3.91), transportation convenience (3.97), parking area (3.83), aquatic product quality (3.83), are all between 3 and 4, not meet the satisfactory. In regard to the perceived

Table 2 Basic information of tourists visited the Dongqian Lake

Basic information	Groups	Percentage
Gender	Male	48.20%
	Female	51.80%
Age	18-25	31.41%
	26-35	38.54%
	36-45	19.71%
	46-55	4.78%
	Over 56	5.56%
Regions of tourist coming from	Centre area of Ningbo	46.93%
	Other area of Ningbo City	15.61%
	In Zhejiang Province	14.44%
	Outside of Zhejiang province	23.02%
Occupation	Staff of public institutions	11.51%
	Enterprise staff	42.05%
	Self-employed	14.34%
	Farmer	2.44%
	Fisher folk;	0.20%
	Retired personnel, housewife	5.56%
	The unemployed	2.93%
	Students	14.73%
	Others	6.24%

Table 3 Mean and standard deviation of each variable

Structure variable	Observed variable	Mean satisfaction	Standard deviation
Perceived quality	X ₁ : Landscapefeature	4.18	0.884
	X ₂ : Tourism capacity	4.19	0.834
	X ₃ : Landscapedesign	4.02	0.906
	X ₄ : Vegetation	4.35	0.792
	X ₅ : Waterquality	3.91	1.010
	X ₆ : Airquality	4.38	0.785
	X ₇ : Noise	4.12	0.921
	X ₈ : Sanitation	4.04	0.930
	X ₉ : Safety precaution	4.05	0.961
	X ₁₀ : Transportationconvenience	3.97	1.034
	X ₁₁ : Parking area	3.83	1.092
	X ₁₂ : Guidancesign	4.12	0.926
	X ₁₃ : Entertainment	3.75	0.990
	X ₁₄ : Quality of aquatic products	3.83	0.971
	X ₁₅ : Management	4.04	0.909
Tourist expectations	X ₁₆ : Natural environment expectation	4.16	0.891
	X ₁₇ : Social service expectation	4.05	0.893
Perceived Value	X ₁₈ : Ticketprice	3.79	1.073
	X ₁₉ : Goods price	3.67	1.045
Tourist satisfaction	X ₂₀ : Global evaluation	4.06	0.782
Tourist complaint	X ₂₁ : Complaint	1.73	1.135
Tourist loyalty	X ₂₂ : Revisit	3.90	1.013

Table 4 Variance explanations

Component	Eigenvalue	Initial eigenvalues		Square extracting and loading		
		Variance %	Accumulation%	Eigenvalue	Variance %	Accumulation%
F1	8.935	47.025	47.025	8.935	47.025	47.025
F2	1.165	6.131	53.156	1.165	6.131	53.156
F3	1.046	5.507	58.663	1.046	5.507	58.663
F4	.948	4.987	63.650	.948	4.987	63.650
F5	.763	4.016	67.667	.763	4.016	67.667
F6	.658	3.462	71.129	.658	3.462	71.129
F7	.607	3.195	74.323	.607	3.195	74.323
F8	.583	3.068	77.391	.583	3.068	77.391
F9	.561	2.952	80.343	.561	2.952	80.343
F10	.517	2.720	83.063	.517	2.720	83.063
F11	.442	2.324	85.388			
F12	.421	2.214	87.602			
F13	.409	2.150	89.752			
F14	.388	2.044	91.796			
F15	.361	1.901	93.697			
F16	.348	1.833	95.530			
F17	.298	1.569	97.099			
F18	.290	1.526	98.625			
F19	.261	1.375	100.000			

satisfaction. For tourist value, the mean values of the commodity and ticket price are 3.67 and 3.79, neither of which is in the scope of loyalty, the mean value of revisit is only 3.90, and has not achieved satisfaction.

Reliability Analysis

The reliability test shows that the interclass correlation coefficient of single measurement is 0.367, and the interclass correlation coefficient of average measurement is 0.927, which illustrates that the correlation degree of the data in the group is relatively good. The reliability coefficient is 0.927, and the reliability coefficient based on the standard number is 0.930, so the results show a relatively high degree of reliability.

PCA

The observed variables of perceived quality, perceived value and tourist expectation were analyzed. Overall evaluation, complaint and revisit were excluded from the PCA since these three observed variables belong to the outcome variables. The original matrix of the evaluation indicator of the total samples was processed by SPSS firstly, and then obtains its initial eigenvalues, variance contribution rate and cumulative variance contribution rate. All the calculation processes were worked out by SPSS, which can be shown in Table 4.

From Table 4, the cumulative percentage of the first 10 main components is more than 80%, so the first 10

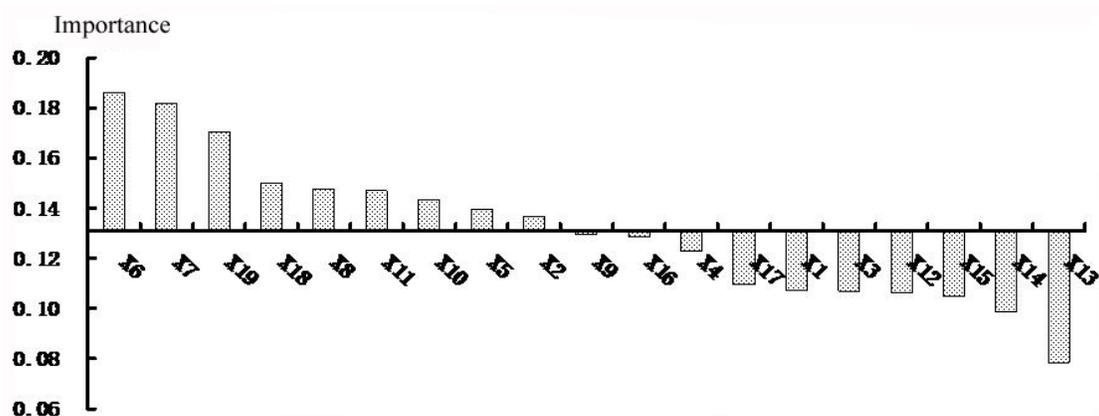
main components can be selected. On the basis of the above results, the load of various factors in the main component can be obtained after rotating the varimax of the principal components coefficient matrix. The results are shown in Table 5.

It is known from Table 5 that F1, F2, F3, F4, F5, F6, F7, F9, F8 and F10 are the main components. Regarding the first principal component F1, the load factors of each variable are high and there are positive relationships between all variable and F1. Air quality, vegetation, noise and water quality are relatively higher load factors with positive relationship with F2 and negative relationship between variable and F2 is entertainment. The load factors on parking area, transportation convenience, safety precaution and noise show positive relationship with F3, while ticket prices and goods prices could represent F4 since the positive relationship. F5 has positive relationship with goods prices and negative relationship with quality of aquatic products. The sixth principal component F6 has negative relationship with social service expectation. F7 could be represented by noise because of positive relationship among them. F8 has positive relationship with water quality but negative relationship with sanitation. Vegetation could represent F9. The tenth principal component F10 could be represented by tourism capacity according to the calculation in Table 5.

Finally the composite score model could be got by further calculating according to the PCA data processing: $Y=0.107X_1+0.137 X_2+0.107 X_3+0.123 X_4+0.140 X_5+0.186 X_6+0.182X_7+0.148X_8+0.130X_9+0.143X_{10}+0.147X_{11}+0.106 X_{12}+0.078X_{13}+0.099X_{14}+0.105X_{15}+0.129 X_{16}+0.110 X_{17}+0$

Table 5 Load of principal component matrix

Observed variable	Components									
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
X ₁ :	.676	.114	-.326	-.271	.244	-.009	.167	.116	-.216	-.162
X ₂ :	.650	.145	-.335	-.227	.244	-.005	.087	-.032	.024	.485
X ₃ :	.724	.137	-.314	-.232	.176	.101	-.086	-.025	-.078	-.233
X ₄ :	.635	.362	-.171	-.041	-.041	-.130	-.137	-.229	.530	-.147
X ₅ :	.652	.289	-.132	.185	-.285	.190	-.225	.379	-.027	-.139
X ₆ :	.652	.472	.034	.216	-.103	.074	.018	.133	-.029	.239
X ₇ :	.613	.327	.313	.167	-.112	.054	.473	-.077	-.054	-.016
X ₈ :	.684	.259	.292	.086	.089	.050	-.182	-.355	-.155	.048
X ₉ :	.738	.082	.326	-.175	.037	-.021	-.073	-.146	-.161	-.192
X ₁₀ :	.687	-.054	.407	-.274	.106	-.039	-.133	.243	-.056	.020
X ₁₁ :	.631	-.175	.408	-.287	.116	-.027	-.073	.226	.278	.112
X ₁₂ :	.650	-.261	-.003	-.238	-.310	.224	.332	-.044	.204	-.051
X ₁₃ :	.708	-.342	-.160	-.129	-.210	.223	-.068	-.155	-.074	.014
X ₁₄ :	.732	-.203	-.126	.056	-.336	.067	-.170	-.021	-.103	.177
X ₁₅ :	.793	-.223	.017	.014	-.134	-.239	-.013	-.143	-.127	.028
X ₁₆ :	.736	-.099	-.092	.188	-.037	-.413	.126	.191	.019	-.062
X ₁₇ :	.747	-.187	-.099	.200	-.019	-.396	.004	-.029	-.032	-.019
X ₁₈ :	.640	-.291	.016	.418	.285	.188	-.148	-.051	.097	.034
X ₁₉ :	.648	-.234	-.008	.369	.344	.239	.164	.062	.080	-.101

**Figure 2** The importance of each variable represented by weight

$$.150 X_{18} + 0.171 X_{19}$$

Coefficient for each variable in composite score model is the weight of each indicator.

Analysis and Comment

The importance of each variable represented by weight in composite score mode are shown in Figure 2 according to coefficients.

Through comparing the weight of each variable in Figure3, it could be found that tourism capacity (X₂),

water quality (X₅), air quality (X₆), noise (X₇), sanitation (X₈), transportation convenience (X₁₀), parking area (X₁₁), ticket prices (X₁₈) and goods prices (X₁₉) are more important. Among them air quality (X₆) is the most important. While landscape features (X₁), landscape design (X₃), vegetation (X₄), security precaution (X₉), guide signs (X₁₂), entertainment (X₁₃), quality of aquatic products (X₁₄), management (X₁₅), natural environment and social service expectation (X₁₆ and X₁₇) are less important. The least important indicator is entertainment (X₁₃). It means people go to the Dongian Lake for fresh.

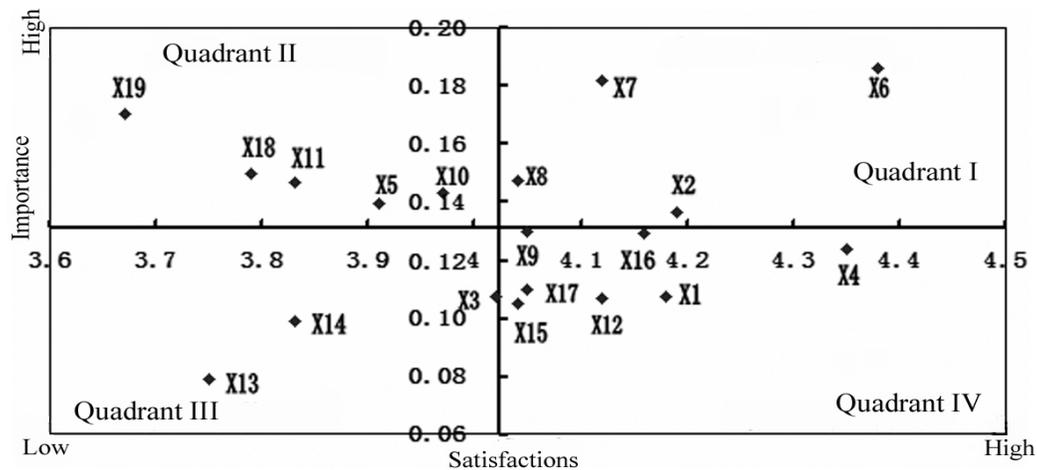


Figure 3 Quadrant diagram of satisfaction-importance of observed variable
 Quadrant I: to be paid attentions; Quadrant II: to improve with priority; Quadrant III: insignificant area; Quadrant IV: maintain area

air, health environment and enjoy stay in nature by convenience transportation and low pay. That is why the Dongqian Lake is so called “Backyard Garden of Ningbo” for the local citizen spending their free time there. Tourists pay less attention to entertainment (X_{13}) and quality of aquatic products (X_{14}) according to the analysis.

The mean satisfaction and the importance of observed variable was chosen as the horizontal axis and vertical axis. The quadrant diagram was drawn (Figure 3). The observed variables located in Quadrant I should be paid attention with both higher satisfaction and more important; in Quadrant II are need to improve with priority because of lower satisfaction and more important; Quadrant III is insignificant area, means the observed variables set in it are not important with low satisfaction, while Quadrant IV is maintain area where the observed variables could be kept due to higher satisfaction and low importance.

The quadrant diagram Figure2 shows that tourism capacity (X_2), air quality (X_6), noise (X_7) and sanitation (X_8) are in Quadrant I. This means that the management departments of the Dongqian Lake need to maintain these four variables falling in Quadrant I. However, tourist satisfaction is not enough in Quadrant II. Water quality (X_5), transportation convenience (X_{10}), parking area (X_{11}), goods prices (X_{18}) and ticket prices (X_{19}) are in Quadrant II. The management department must be cautious in determining how to improving these 5 variables in order to increase tourist satisfaction. Both of the importance and satisfaction are low Quadrant III. Landscape design (X_3), entertainment (X_{13}) and water quality (X_{14}) are in this quadrant. The management department should continue to maintain and pay further attention to the changes of tourist expectations towards the three variables.

Landscape features (X_1), vegetation (X_4), safety precautions (X_9), guidance signs (X_{12}), management (X_{15}), natural service expectations (X_{16}) and social services expectations (X_{17}) are included in Quadrant IV. The management department should rethink whether they have given too much attention to these variables since higher satisfaction and low important. If possible, the management department should shift its resources to other more important variables, such as the observed variables in Quadrant II, to achieve more efficient cost-benefit.

CONCLUSION

From the results of the questionnaire, the tourists of the Dongqian Lake are mostly at young or middle age; tourists are mainly from Ningbo central area. In terms of occupation, employees of enterprises and public services are the main parts of tourists.

Based on the evaluation results of the questionnaire and the importance analysis of the variables, the conclusion and suggestions are:

- The overall evaluation of tourist satisfaction is 4.06, which indicates that the responded tourists are satisfied with the Dongqian Lake scenic area;
- Tourist loyalty is 3.90, lower than satisfaction, and it implies that tourists revisiting is not enough;
- The tourist complaint is 1.73, and it infers that tourists do not complain about the scenic area.
- Among them, tourists are more satisfied with the tourism capacity, air quality, noise and sanitation. So the management department of the Dongqian Lake needs to maintain them.
- Tourists show a higher satisfaction degree to

landscape features, vegetation, safety precautions, guidance signs, management, natural service expectations and social service expectations, but the importance of the seven variables are not obvious. Therefore, the management department should appropriately reduce their focus on them.

- it is necessary to lay stress on water quality, transportation convenience, parking area, goods prices and ticket prices. A series of measures should be proposed, such as reconstruct and expand parking area, adjust ticket and goods price, increase the number of bus or shorten interval of bus departure etc. to improve tourist satisfaction and their loyalty so that they are willing visit the Dongqian Lake again.

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