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조경학석사 학위논문

A Study on the Satisfaction  
Evaluation of Landscape Elements  
for Light Theme Park  
: A Case of Starlight Garden 000Z000

빛 테마파크 조경요소의 만족도 평가 연구  
: 별빛정원우주 대상으로

2023년 02월

서울대학교 환경대학원

환경조경학과

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A Study on the Satisfaction  
Evaluation of Landscape Elements  
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# A Study on the Satisfaction Evaluation of Landscape Elements for Light Theme Park

: A Case of Starlight Garden 000Z000

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## Abstract

### A Study on the Satisfaction Evaluation of Landscape

#### Elements for Light Theme Park

: A Case of Starlight Garden OOOZOOO

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Night tourism is a recent concept in tourism and is a new trend. People experience tourism differently from daytime tourism experience in the night tourism experience. In other words, you can experience the unique scenery of the city at night that could not be seen during the day.(Kim Seong-Min, 2021).

The main object of this paper is the light theme park, a type of night-time tourist venue emerging worldwide. However, some of these theme parks have been left unattended for a long time or closed down due to poor management. Therefore, it is essential to improve the quality of the landscape of light theme parks, mainly parks, to meet visitors' needs and ensure usage. The improvement of the landscape will not only enhance the theme of the Theme Park. But will also help visitors to get the most out of their cultural and entertainment experience without losing the role of the theme park as a resting place. In the case of night-time tourism, it would be

logical to assume that landscape elements would have a low impact on visitor satisfaction due to the night-time. However, this is evidence of the fact that there are many neglected aspects.

In this paper, the basic principles of the evaluation index system are understood, and the results of the interviews with the operators and staff and the results of the pre-questionnaire are combined with the current landscape situation of Starlight Garden OOOZOOO. The evaluation indicators of the landscape elements were selected and determined. A questionnaire survey was then conducted with visitors to Starlight Garden OOOZOOO to evaluate the importance and performance of the landscape elements. The results were analyzed based on the IPA model, and the four quadrants of the IPA model results were plotted and analyzed. Finally, a short personal interview with some visitors was conducted to understand and summarise their perceptions of Starlight Garden OOOZOOO and their expectations of the night-time tourist venues.

This paper aims to increase visitors' satisfaction with the light theme park and to summarise what needs to be done to improve the landscape elements of the light theme park, as well as the visitors' preferences and expectations for the light theme park. This will provide a basis for the night-time economy and night-time tourism. It also can provide a reference for the design of the landscape elements of the planned light theme park.

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**keyword : Light Theme Park, Night-time Tourism Venue,  
Satisfaction Evaluation, Landscape Elements, IPA model**  
**Student Number : 2021-23988**

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# Chapter1. Introduction

## Section1.1. Research Background and Purpose

### 1.1.1. Research Background

#### 1) Revitalization of Night-time Tourism

In the wake of Covid 19, economies worldwide have been hit hard. Not only Korea but also major Western European cities such as London, New York, Sydney, Amsterdam, and more recently, major Chinese cities and Japan are looking for opportunities for economic activation and job creation in the 'night-time economy' (Yoo Hyun-Wook; Kim Yo-Sep; Kim Sang-Man; Jeong Gang-Hoa, 2021). "In advanced foreign countries, tourism, festivals, and events under the concept of 'night economy' are contributing to the sustainable development of regions and cities and the innovative growth of companies and organizations." Furthermore, "For festivals and event officials, achievements such as strengthening professionalism have already been proven. We will actively respond to the rapidly changing future and take the lead in introducing new trends." (IFEA<sup>1)</sup> Korean branch manager Jung Kang-hwan). Korea Tourism Organization has been promoting Night-time Tourism venues in Korea since 2021 and has launched a competition for Night-time Tourism specialised cities<sup>2)</sup> in 2022. This shows that night-time

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1) IFEA: International Festivals & Events Association

2) Night-time Tourism Specialised Cities: A city specializing in night tourism refers to a city where there are no restrictions on night tourism activities due to the concentration of contents and scenic attractions that can be enjoyed during night time (6 p.m. to 6 a.m.) and accommodation, food, and security. Components include night content night scenery attractions night tourism conditions.

tourism is being actively promoted in Korea.

Night tourism is a concept that has emerged in recent years in tourism studies, which implies a new trend. This Night-time Tourism experience is an entirely different level of experience from the daytime sightseeing experience. Many unique urban landscapes may exist at night that are not visible during the day (Kim Seong-Min, 2021).



Figure 1-1 : 100 Bling Bling Night-time Tourism Venues

Source : Visitkorea<sup>3)</sup>

## 2) Light Theme Park

One of the many night-time tourism venues that cannot be ignored is the theme park (the theme park in this article is not an amusement park, it refers to any garden with a theme). Theme parks operate at night in two ways: a theme park that adds illumination to the existing park environment, the other is a theme park that uses light (illumination) as a theme. In recent years, theme parks that add night-time lighting (illumination) to the original base for marketing have abounded. Light theme parks are also

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3) <https://korean.visitkorea.or.kr/>

popping up all over the world. However, some of these theme parks have been closed down because they were not well run and thus left for a long time. This is partly because the landscape or theme of the theme parks is not attractive enough to attract visitors. Others are due to the inability of park operators to adapt their operations to public demand or to improve the landscape. Interviews with the operators of the light theme parks indicate that the existing theme parks are hard to receive the desired level of visitors. Therefore, it is necessary to improve visitor satisfaction while ensuring the nighttime experience of the light theme park. So, this paper will look at the analysis and improvement of landscape elements, starting from the main body of the light theme park.

#### **1.1.2. Research Purpose and Significance**

The subject of this paper is a light theme park, one of the types of night-time tourism venues. The detailed classification to improve visitor satisfaction with light theme parks includes, for example, the economic level, the environmental level, the management level, and other aspects. However, as the light theme park is the main body of the park, the ecological element is essential. Therefore, to meet the needs of tourists and ensure the utilization of the premise, improving the quality of the landscape is critical. The improvement of the landscape not only helps to enrich the theme of the park but also helps to maximize the entertainment and cultural experience of the visitors without losing the role of the theme park as a resting place. In the case of night-time tourism, the lack of light would lead to the assumption that the landscape elements would have a low impact on visitor satisfaction. However, this is evidence of the fact that there are

many overlooked landscape elements. It is, therefore, essential to analyze the landscape elements of night-time tourism venues. In particular light theme parks, visitors are often attracted by the lights and have a series of recreational experiences, such as taking pictures and interacting with them. In such a situation, the unconventional lighting obscures some of the visitors' most intuitive feelings and experiences of the landscape. At its root, the landscape element occupies a significant position in the visitors' perception of a theme park. The extent to which the landscape elements of a light theme park can influence visitor usage and satisfaction is, therefore, of research value. At the same time, improving the light theme park's landscape elements can enhance the central park's attractiveness to its visitors. This would increase the potential for stimulating increased visitation to the light theme park during the day and increasing the usage and revisit rate of the light theme park at night to a certain extent.

By analyzing the results of the satisfaction assessment of the landscape elements of the light theme park and the results of the interviews with visitors about their experience of the light theme park, this paper aims to increase visitors' satisfaction with the light theme park and to summarise the areas for attention and improvement in the landscape elements of the light theme park, as well as the visitors' preferences and expectations for the light theme park. The project aims to improve visitors' satisfaction with the light theme park. This will provide the basis for revitalizing the night-time economy and night-time tourism. It also serves as a reference for the design of landscape elements in the planned light theme park.

## Section 1.2. Research Scope and Method

### 1.2.1. Research Scope

#### 1) Scope at the Spatial Level

The research object of this paper is the light theme park. According to a survey, the Seoul Metropolitan area and Jeju Island have many light theme parks in Korea. The subject of this article is Starlight Garden OOOZOOO, a light theme park located in Gyeonggi-do, Icheon-si<sup>4)</sup>, Majang-myeon, based on searchable photo materials and site investigation. The park has been working since October 2017 as part of the Deokpyeong Nature Service Area. In 2017, Deokpyeong Nature Service Area had the highest annual sales of any service area in Korea (and the highest in Korea as of August 2022). (Korea Expressway Corporation). This shows that the spending potential of the park is powerful.



Figure 1-2 : Location of Destination-1

4) <https://map.naver.com>

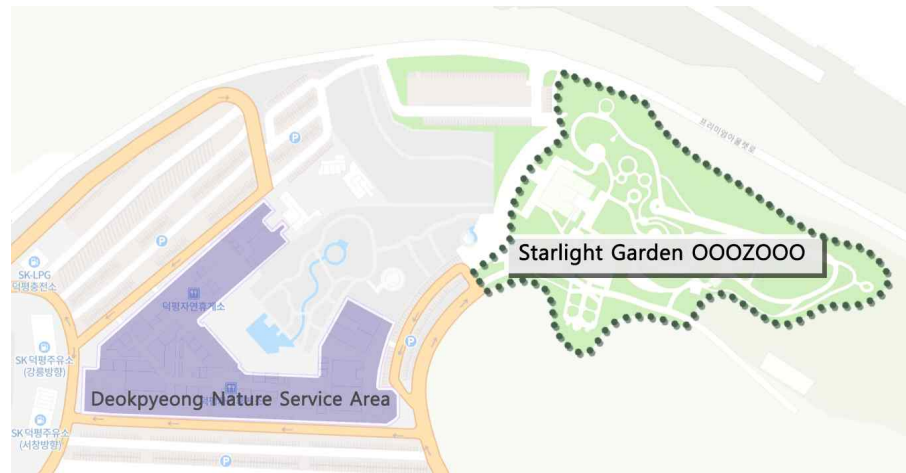


Figure1-3 : Location of Destination-2

Starlight Garden OOOZOOO operates on a three-stage theme of meet OOOZOOO - enjoy OOOZOOO - get hooked on OOOZOOO. It has high popularity and good reviews on SNS. The geographical advantage of the Service Area and its easy access to the city guarantee the number of visitors. According to the information provided by the Starlight Garden OOOZOOO side, the monthly visitor traffic from October 2017 to October 2022 was analyzed. Even after COVID-19, the number of visitors was not significantly affected. In this paper the objective of this study is to examine how visitors evaluate the landscape elements of the light theme park when they are in Night-time Tourism. So, in this paper, we have chosen the light theme park, which has good visitor numbers and a reputation.



Figure 1-4 : Starlight Garden OOOZOOO

Source : Starlight Garden OOOZOOO Homepage<sup>5)</sup>

## 2) Scope at the Content Level

This paper takes the current situation and prospects of the night-time Tourism and light theme park as a cornerstone and the development of night-time tourism and light theme park as an objective. It aims to establish a system for evaluating the landscape elements of light theme parks. The evaluation system will be applied to the satisfaction evaluation of the Starlight Garden OOOZOOO. Based on the satisfaction evaluation results of Starlight Garden OOOZOOO visitors, this paper will analyze and summarize the expectations and preferences of OOOZOOO and night-time tourism.

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5) <http://www.ooozooo.co.kr/>

### 1.2.2. Research Method

Firstly, this paper will provide an in-depth understanding of night-time tourism and light theme parks through extensive literature and prior research. This includes, but is not limited to, the definition and current development of Night-time Tourism and light theme parks, examples of light theme parks from home and abroad, studies on the use and satisfaction of visitors to light theme parks, studies on the landscape elements of parks in general and theme parks and the evaluation of the landscape elements of parks, and the introduction and application process of the IPA analysis method model.

Secondly, on the premise of understanding the basic principles of the construction of the evaluation index system, the landscape elements in the research papers and landscape design papers on the evaluation of landscape elements are analyzed. The evaluation indicators of landscape elements are selected by combining the current landscape situation of Starlight Garden OOOZOOO. Then through the analysis of the interview content with OOOZOOO staffers and the light theme park visitors of the preliminary landscape elements evaluation results, the final landscape elements to be evaluated will be identified finally.

Thirdly, a formal questionnaire will be administered to the visitors of Starlight Garden OOOZOOO to evaluate the importance and satisfaction of the landscape elements identified. The results will then be tallied and analyzed. The statistical results and analysis will be divided into three parts. Firstly, the composition of Starlight Garden OOOZOOO visitors will be mastered by combining the observations' results and the interviewees' basic information. Then, the results under the IPA analysis model will be analyzed,



and the results of the four quadrants of the IPA model will be plotted based on the results of the importance and satisfaction ratings of the landscape elements. Based on the data analysis and the quadrantal result diagram, each upper-level landscape element is analyzed in detail, and the performance of this landscape element in Starlight Garden OOOZOOO, as well as the demand and judgment of visitors to the overall night-time tourism, will be put forward. Finally, through the results above, short personal interviews will be conducted with some visitors to understand and summarise their perceptions of the Starlight Garden OOOZOOO and their expectations of overall night-time tourism or other night-time tourism venues.

### Section 1.3. Research Progress

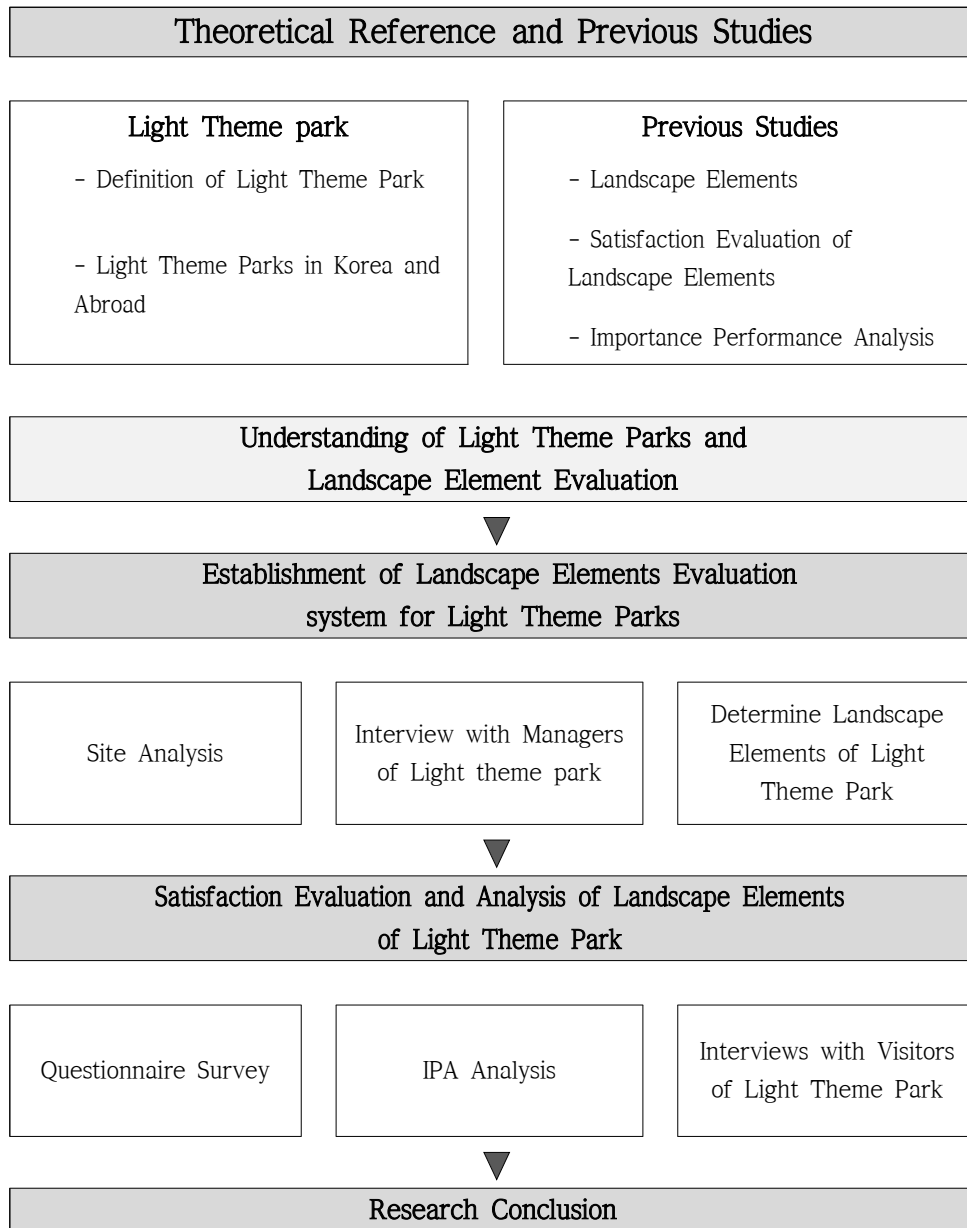


Figure 1-5 : Research Progress

## Chapter2. Theoretical Reference and Previous Studies

### Section 2.1. Light Theme Park

#### 2.1.1. Definition of Light Theme Park

In general, many people define theme parks as amusement parks. However, Amusement parks are non-routine leisure spaces that provide impression and enjoyment to visitors by planning amusement (Encyclopedia of Korean National Culture<sup>6)</sup>). The definitions of amusement parks and theme parks are almost identical. On the other hand, an amusement park is one of the theme parks with the theme of amusement. Therefore, not all theme parks are amusement parks. Some theme parks can be themed on a particular traditional culture of a country in a specific species. It can be on an animal species or any existence or form. Theme parks are a modern form of a tourist destination with creative tour clues and planned activities built to meet the diverse leisure and entertainment needs and choices of tourists. (Dong Gguanzhi, 2010)

The research object of this paper: light theme park is a theme park with light (illumination) as the theme. In the existing studies, there are fewer definitions of light theme parks. The light theme park is a beautiful landscape in the daytime, while the splendor of the evening gives endless reverie and refreshment with its colorful shapes. It adds rich sensation to people's evening cultural life, new content and experience to the tourism

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6) <http://encykorea.aks.ac.kr/>

industry, and makes the park's range more prosperous and three-dimensional(Guo Zhenyong, 2015). The light theme park has a variety of lighting experiences, allowing visitors to experience the lighting experience at night fully. Therefore, the definition of a light theme park is a unique leisure space with night scenery or lighting as the theme, which provides visitors with visual enjoyment of playing and resting.



Figure 2-1 : The Light Park (State of Texas)  
Source : The Light Park Homepage <sup>7)</sup>

### 2.1.2. Light Theme Parks in Korea and Abroad

Recently, many theme parks with night scenery and lighting have emerged in Korea. These parks are generally not very large in scale. Some have been operating poorly, used night lighting marketing to cover the original theme, and operated light theme as the main center. According to the research, many such theme parks exist in the metropolitan and Jeju areas. However, the operating hours and conditions are very different. The following table is

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7) <https://www.thelightpark.com>

a compilation of light theme parks in Korea, including those that were not previously light theme parks but have since added many illumination elements and are operating under the light theme. (Possibly incomplete)

## 1) Light Theme Parks in Korea

[Table 2-1] Light Theme Parks in Korea

| Name of<br>Light Theme Parks           | Location  |
|--|---|
| Starlight Village Photoland Theme Park | 1723, Suin-ro, Sangnok-gu, Ansan-si,<br>Gyeonggi-do                         |
| Provence Village Theme Park            | 69, Saeori-ro 395beon-gil,<br>Tanhyeon-myeon, Paju-si, Gyeonggi-do          |
| Starlight Garden OOOZOOO               | 287-76, Deogi-ro 154beon-gil,<br>Majang-myeon, Icheon-si, Gyeonggi-do       |
| First Garden                           | 260, Tapsakgol-gil, Paju-si, Gyeonggi-do                                    |
| Nature World                           | 200, Mageompo-gil, Nam-myeon,<br>Taeon-gun, Chungcheongnam-do               |
| Jeju Light Garden                      | 2346, Pyeonghwa-ro, Aewol-eup, Jeju-si,<br>Jeju-do                          |
| Cheongdo Provence Photoland            | 272-23, Iseulmi-ro, Hwayang-eup,<br>Cheongdo-gun, Gyeongsangbuk-do          |
| Suyangga Light Tunnel                  | 390, Suyanggaeyujeok-ro, Jeokseong-myeon,<br>Danyang-gun, Chungcheongbuk-do |

## 2) Light Theme Parks in Abroad

Like South Korea, many more parks have added significant illumination elements to existing theme parks than parks solely themed with lights. Many

parks, theme parks, and town squares also have illumination festivals, which provide visitors with night visit experience space and increase the park at night visits through illumination elements. Internet research shows overseas illumination theme parks are more prominent than Korea's.

#### Dubai Graden Glow (Dubai)

The Dubai Graden Glow is essentially a garden located in Zabeel Park. Aptly named, this garden glows and shines at night. Hundreds of artists use their creativity to create a magical world inside the garden. Countless light bulbs illuminate this dazzling theme park's beautiful creatures and landscapes. Dubai Graden glow is not open all year round but only from November to May due to the country's geographical location and hot weather. The park opens daily after 4:00 pm.

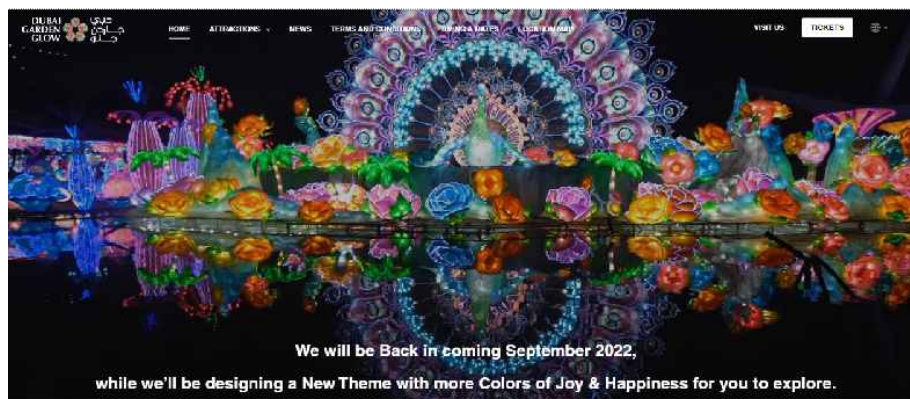


Figure 2-2 : Dubai Graden Glow

Source : Dubai Garden Glow Homepage<sup>8)</sup>

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8) Dubai Graden Glow: <https://www.dubaigardenglow.com>

### Zigong Chinese Lantern World (China)

This scenic spot held a New Year's Eve event with the theme of "The City of Lights has you - always with you to light up 2022", which received an outstanding response. There are five divisions and 14 thematic sections in the park. Digital technologies such as naked eye 3D and AR virtual reality enhancement are integrated to create interactive, immersive light and shadow experiences, furthermore implanted with the intangible cultural heritage exhibition, food experience, dance performances, and other activities. Give visitors a new and shocking audio-visual experience. (Baidu Baike) In 2022, China Lantern World will also complete the second construction phase. It fits the development direction of China's nighttime economy.



Figure 2-3 : Zigong Chinese Lantern World

Source : BaiduBaike <sup>9)</sup>

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9) Zigong Chinese Lantern World : BaiduBaike (baike.baidu.com)

## Section 2.2. Previous Studies

### 2.2.1. Landscape Elements

#### 1) Definition of Landscape Element

The landscape element is different from the landscape design element. The landscape design element is the element that focuses on design. These elements of design include mass, form, line, texture, and color. In the landscape, they transform space and create a unique experience.<sup>10)</sup> However, the element of landscape can be roughly divided into two types. One is natural, and the other is manmade. Natural includes plants/vegetation, water, earth form/landforms, timber, stone, etc. Manmade include brick, metal, plastic, and glass. Among them, Stones are used for the following: Paving, Retaining walls, Stacked stone walls, Sitting, Shelters, Parapets, Bridges, Sculptures, Planters, and Bollards (Diksha Sharma, 2014).<sup>11)</sup> All elements of landscape that contain these and things based on elements of landscape are called landscape elements.

#### 2) Landscape Elements in Previous Studies

As there is no research on landscape elements in light theme parks, this paper examines landscape elements from various perspectives. These include, but are not limited to, the evaluation of landscape elements in public urban parks and the design of landscape elements in public urban parks and theme parks. The landscape elements in these studies are collated.

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10) southern living plants : <https://southernlivingplants.com/>

11) <https://www.slideshare.net/>



[Table 2-2] Landscape Elements in Previous Studies

| Description   | Previous Study Title   | Author   |
|---|--|--|
| The main elements of park landscape design are space, topography, water bodies, and paving. Independent elements include plants, sculptures, structures, stones, etc.   | Research on Perceptive Design of Community Outdoor Activity Space  | He Jing;<br>Qiu Canhong,<br>2011                                     |
| Hills, pools, buildings, plants, animals, and styles are the main elements used to build ancient Chinese gardens.   | On the Design of Landscape Elements of Theme Park<br>----- Taking Tang Paradise for Example  | Li Xuezhi,<br>2013   |
| Urban landscape elements: Through the previous research and the definition of the concept of urban landscape system. The broad scope is divided into natural and human categories. The system elements of the urban natural landscape are summarised as topography, water bodies, green areas, climate, etc., and the urban human landscape system elements are summarised as architecture, urban furniture, structures, etc. | The Research on the Evaluation Method of the Urban Landscape Elements  | Hou Yupeng,<br>2013  |
| Water, vegetation, seats, road, square, and openness of the landscape were essential landscape elements of landscape preference in urban parks.   | Bridging Landscape Preference and Landscape Design: A study on the Preference and Optimal Combination of Landscape Elements Based on Conjoint Analysis | Cai Keyi;<br>Huang Wenwen;<br>Lin Guangsi,<br>2022                   |
| The shape and view are created through the actions of landscape architects, architects, and spatial planners and depend on many factors, both natural and anthropogenic (SPENS 2003)  | Method of landscape evaluation and elaboration of protection for individual elements of the rural space of the Drawski Landscape Park                  | Dudzińska;<br>Szpakowska –<br>Nauka Przyroda<br>Technologie,<br>2014 |

### **2.2.2. Satisfaction Evaluation**

Satisfaction became a formal field of study when Cardozo (1965) introduced customer satisfaction into marketing. The study of satisfaction in tourist destinations began with studying product and service quality in the manufacturing industry. In the 1970s, the American scholar Pizam and others laid the foundation for learning tourist satisfaction theory. Different scholars have elaborated on satisfaction from different perspectives, depending on the needs of their research topic. To date, there is no uniform definition of consumer satisfaction. (Chen XL, 2018) There are many ways to evaluate the landscape elements, and the following table will focus on the four methods of IPA, SBE, AHP, and LCJ.

[Table 2-3] Types of Satisfaction Evaluation in Previous Studies

| Type  | Description  |
|---|--|
| IPA<br>(Importance-Performance Analysis)    | The IPA analysis method requires respondents to rate each measure for a given survey respondent in terms of both importance and performance. The IPA method requires respondents to place the reputation and performance of each step separately. When used for satisfaction measurement, performance is the satisfaction rating.<br>(Chen, X., 2013).   |
| SBE<br>(Scenic Beauty Estimation procedure) | Based on Torgerson's (1958) Law of Categorical Judgment, subjects were asked to rate each landscape (often using slides as a medium) on a scale (0-9) according to their criteria, without adequate comparison between landscapes<br>(Xiao Guozeng, 2007)  |
| AHP<br>(Analytic Hierarchy Process)         | The use of hierarchical analysis (AHP) to build a landscape quality evaluation system is the most mature and widespread. The comprehensive study of landscape quality evaluation is also more scientific, objective, and accurate. Many new scientific technologies such as remote sensing, digital imaging, and aerial photography are also constantly involved in the evaluation process, making the understanding of the evaluation objects more accurate and comprehensive (Daniel T C, Boster R S. 1976.) |
| LCJ<br>(Law of Comparative Judgment)        | Based on Thurston's (1959) comparative rubric, developed by Buhyof et al. A beauty scale is to be obtained by asking subjects to compare a set of landscapes (photographs or slides). (Xiao Guozeng, 2007)   |

The human perception of the landscape can be called landscape perception, also known as landscape experience or environmental experience. Landscape perception is people's active and selective activity in a spatial

environment that does not follow the activity arrangement conceived by the designer. (Li Xiao, 2018). As light theme park is a night-time tourism venue with its characteristics, the subjective perceptions of the visitors are more crucial to this study. In this paper, we will focus on the subjective judgments of light theme park visitors before and after their visit. Therefore, in this paper, the satisfaction assessment will be evaluated using the IPA model, which can be defined as comparing the performance of the landscape elements of the light theme park with the pre-experience assessment after the visitor has visited and experienced the light theme park.

### **2.2.3. Importance Performance Analysis**

#### **1) Definition of Importance Performance Analysis**

Importance-Performance Analysis is known as IPA analysis. Martilla and James first introduced IPA in 1977 to analyze the attributes of products in the locomotive industry. The IPA method is based on the simultaneous scoring of the same elements: on the one hand, it analyses the importance of each measure in the mind of the interviewer and the actual perception of it and the difference between the two; on the other hand, the results of the IPA four-quadrant diagram show that each element belongs to Keep up the excellent work; Concentrate here; Low priority; Possible overkill.

#### IPA model quadrant chart

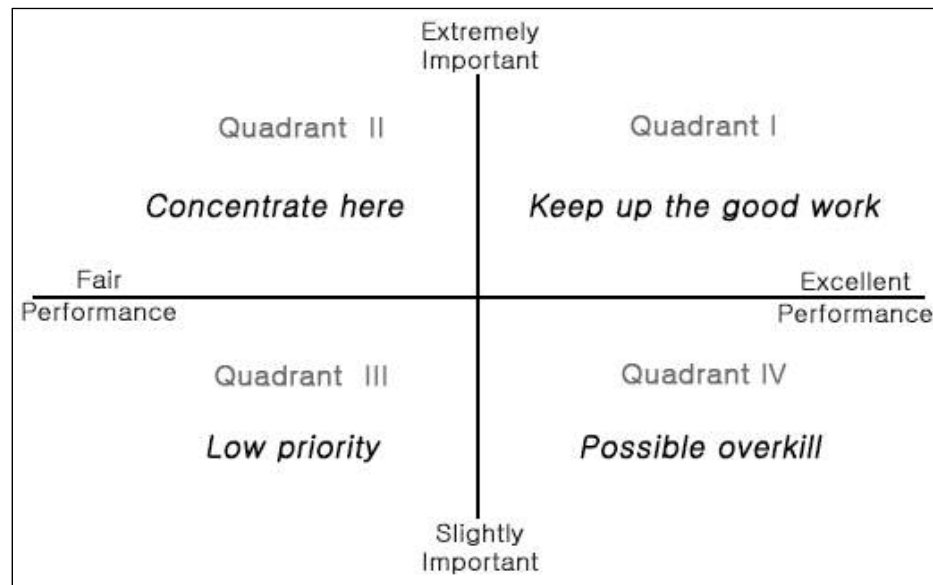


Figure 2-4 : IPA model quadrant chart

IPA analysis limit charts provide a visual representation of the data categories; the chart area is divided into four quadrants using horizontal and vertical dividers. Each quadrant presents the corresponding data (SPSSAU). The x-axis of the quadrant chart is satisfaction; the y-axis is importance.

Quadrant I is the strengths area, indicating high importance and high satisfaction values. The elements falling in this quadrant should continue to strive to maintain the status quo and build on their strengths.

The II quadrant is an improvement zone, indicating a relatively high level of importance but a relatively low level of satisfaction. The elements in this quadrant need to be changed and adapted to the needs of the visitors and the general trend. To some extent, this is a kind of gap-finding.

The III quadrant is an opportunity zone, indicating low values of both importance and satisfaction, and the elements falling within this quadrant can be improved, but are not a priority. If positive and timely adjustments and improvements can be made, some visitors may like them.

The IV quadrant is a maintenance quadrant, which indicates a relatively low level of importance but a relatively high level of satisfaction. The overall satisfaction level will likely be maintained or increased as a potential advantage in the future.

## (2) Progress of Importance Performance Analysis

[Table 2-4] Steps of IPA

| Step Number | Step Content                                       | Description  |
|-------------|--|--|
| Step 1      | Determining the Genus of the Participation Element | The attributes of the participation elements, i.e., the participation indicators, are generally determined through literature, interviews, field surveys, etc.               |
| Step 2      | Determining Final Questionnaire                    | Select and determine the participant indicators to be assessed and the range of assessment scores, and develop the final questionnaire.                                      |
| Step 3      | Conduct Tests of Reliability and Validity          | Using the software SPSS, the resulting data were tested for reliability and validity.  |
| Step 4      | Extraction of Average Values                       | The extracted measures were averaged for importance and perceived performance.   |
| Step 5      | Draw the Scaled IPA Quadrant Result                | The importance (I) and performance (P) scores for each of the indicators were derived separately from the results of the study, and a scaled IPA quadrant diagram was drawn. |
| Step 6      | Point the Elements                                 | Based on the actual scores obtained for each participant indicator in terms of importance and satisfaction, find the drop-off points for each element.                       |
| Step 7      | Analysis of Results                                | Explanation of the indicators for each of the four quadrants.  |

## Chapter3. Establishment of Landscape Elements

### Evaluation system for Light Theme Parks

#### Section 3.1. Site Analysis<sup>12)</sup>

##### 3.1.1. Current Situation

Starlight Garden OOOZOOO is a light theme park in Icheon-si, Gyeonggi-do, Korea. The park has a three-stage marketing theme: meet OOOZOOO - enjoy OOOZOOO - get hooked on OOOZOOO. The park is operated with the marketing theme of meet OOOZOOO - want OOOZOOO - get attached on OOOZOOO. The lighting is fully utilized in three sections, OOOZOOO Station, Art Cube, and Tunnel Galaxy 101. The three sections are connected in space and complement each other in theme.

Starlight Garden OOOZOOO is open as a cafe during the daytime and free of charge for customers who spend money in the restaurant. At the same time, at night, it is officially available for ticket sales.



Figure 3-1 : Starlight Garden OOOZOOO

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<sup>12)</sup> All photographs in section 3.1. were taken by the author self





Figure 3-2 : Service Time






Figure 3-3 : Indoor Space

### 3.1.2. Landscape Environment


Two site visits were made to get an overview of the OOZOOO landscape environment in Starlight Park, which was classified and summarised. The following table can be consulted. The table contains the types of the landscape involved in general and theme parks, which are captured in this paper. In addition to the elements of the general type, the characteristics of night-time space and light theme parks have also been considered for additional description.

[Table 3-1] Description of Landscape Environment in 000Z000

| Landscape Elements    | Description  | Image  |
|-----------------------|--|--|
| Plants                | Different densities of trees and grasses according to park blocks.<br>Moderate variety and uneven numbers.   |    |
| road & floor pavement | The roads are well organized and prioritized.<br>As far as possible, the simplest paving has been maintained, thus supporting the overall image of the park. |   |
| Sculpture (character) | Few character sculptures in the park.<br>The rabbit in the picture is the primary image and can be considered the central symbol.                            |  |

|                                   |  |  |
|-----------------------------------|--|--|
| Bench                             | <p>Light show space with many chairs for viewing.</p> <p>Near the cafe, there are many chairs for resting.</p> <p>There are chairs with different themes for different spaces, even chairs designed by famous designers.</p> |    |
| Lighting<br>(Streetlight)         | <p>Every part of the park has a certain number of street lights.</p> <p>Although there is a lot of light sculpture, the street lights are set up more for safety and lighting when taking pictures.</p>                      |   |
| Illumination<br>(light sculpture) | <p>The longest 101m light tunnel in Korea</p> <p>Large-scale light building for lighting show.</p> <p>Large Blue Light Ocean.</p>  |  |
| Board                             | <p>In the photo area or fixed play space with a signage display.</p> <p>There will also be boards in the interior and front of the building.</p>   |  |



|            |  |  |
|------------|--|--|
| Building   | <p>Several open buildings with separate spaces.</p> <p>Several enclosed interior spaces.</p>   |    |
| Topography | <p>There are no significant slopes in the park as a whole.</p> <p>To the right of the entrance to the park, there is a relatively steep section of hiking trail.</p> |   |
| Water      | <p>There is no natural water space in the park</p> <p>There is a small fountain in keeping with the overall park body.</p>   |  |

## **Section 3.2. Interview with OOOZOOO Managers**

In the in-depth interviews with the OOOZOOO managers, the current situation of OOOZOOO, the landscape elements within OOOZOOO, and the development of OOOZOOO and the light theme park were discussed. As a result of the interviews, a better understanding of OOOZOOO was gained, and the thought of the light theme park was opened up from the professional management perspective. It also adds credibility to the landscape elements selected for the satisfaction evaluation.

### **3.2.1. Current Situation of OOOZOOO**

Firstly, a light theme park is, as the name suggests, a theme park with a focus on light, and as such, a theme park has a very dominant theme compared with other general parks. As a result, visitors to the light theme park are concentrated at night, and the lighting performance has a direct impact on the operation of the light theme park. As expected, OOOZOOO has relatively few daytime visitors. The number of daytime and nighttime visitors is approximately 2:10, and the number of visitors is not yet satisfactory at this stage. Steadily increasing the number of visitors is something that the team has been working on. The operators have tried many methods. These include organizing events, online promotions, joint sales with other products, discounts, etc. Such approaches generally result in some temporary increase in visits, but they are not sustainable.

Considering the on-site research and the content of the interviews, it is

clear that OOOZOOO is now in a stage of development where it is operating with care and is steadily gaining in popularity. Before covid19, overseas visitors also made up a percentage of the visitors. Now that the covid19 situation has subsided, people are more interested in outdoor activities than before. As a result, the number of visitors can be maintained at a similar level.

### **3.2.2. Landscape Environment**

Regarding the landscape environment, OOOZOOO is a garden-style light theme park whose original landscape environment is healing and attractive to visitors. In addition, the management has made timely environmental adjustments and maintained them appropriately. As a result, there are no significant problems with the on-site response or complaints from visitors. Because visitors use the site mainly at night, it is difficult to change the landscape significantly. However, if we can increase the number of visitors during the day, landscape improvements can also be considered to improve the visitor experience and satisfaction. Moreover, OOOZOOO has always maintained a cautious approach to landscape decoration. The landscape decoration of OOOZOOO is changed during different seasons or festivals, such as Halloween and Christmas. This allows visitors to immerse themselves in the light theme park's unique atmosphere and feel the festive atmosphere, greatly enhancing the visitor experience and satisfaction.

### 3.2.3. Development of OOOZOOO and Light Theme Park

The operators have maintained a relatively optimistic view of the future of OOOZOOO. Although turnover is still somewhat short of the expected level, much effort has been made to promote and maintain the environment. night-time tourism, especially in the outdoor park, is heavily influenced by nature. If the whole center could be moved indoors, it would solve many problems. But there is no substitute for the outdoor nature experience. The daytime access to the park: the café is moving towards a regional webshop and is already bearing small achievements. As a result, the management and operations are developing positively. The light theme park, as one of the night-time tourism venues, may seem more niche, and there are not as many in operation at the moment, but there have been light theme parks being built and put into operation over the years. However, the challenges of running one are more significant than one might expect, and the difficulties are greater than those of a typical project. It is a castle in the dark, full of glittering 'fireflies' that can't be replaced. Therefore, increasing the satisfaction of visitors, strengthening the advantages of the light theme park itself to attract more visitors, and increasing the rate of repeat visits will be the way forward for the development of the light theme park.

## Section 3.3. Determine the Landscape Elements of the Light Theme park

### 3.3.1. Initial Selection Based on Previous Studies

With reference to the theme park landscape design and landscape evaluation studies, the following typology of landscape elements has been integrated. They are the upper-level landscape and lower-level elements under the upper-level landscape elements.

[Table 3-2] Landscape Elements in Previous Studies-1

| Landscape Elements of Theme Park | Li xuezhi, 2013 | Cai, K., Huang, W., & Lin, G., 2022 | Deng, L., Li, X., Luo, H., Fu, E. K., Ma, J., Sun, L. X., ... & Jia, Y., 2020 | AAAtwa S M H, Ibrahim M G, Saleh A M, et al. (2019) | Li HM & Jin YM (2011) |
|----------------------------------|-----------------|-------------------------------------|---|---|-----------------------|
| Building                         | ●               | -                                   | -   | -   | -                     |
| Hills, Steles and Piled Stones   | ●               | -                                   | -   | -   | -                     |
| Water                            | ●               | ●                                   | ●   | ●   | ●                     |
| Plants                           | ●               | ●                                   | ●   | ●   | ●                     |
| Landscape Furniture              | -               | -                                   | ●   | ●   | ●                     |
| Seat                             | -               | ●                                   | -   | ●   | -                     |
| Road & Pavement                  | -               | ●                                   | ●   | ●   | -                     |
| Square                           | -               | ●                                   | -   | -   | -                     |
| Lighting Units                   | -               | -                                   | -   | ●   | -                     |
| Topography                       | -               | -                                   | ●   | -   | ●                     |



[Table 3-3] Landscape Elements in Pervious Studies-2

| Elements                     | Atwa S M H, Ibrahim M G, Saleh A M, et al.(2019) | 채진해, & 김원주. (2020). | Huimin Li,a, Yanming Jin (2011) | Lingyan Xian, YunqingTian & Yucong Pan (2022) |
|------------------------------|--|---------------------|---------------------------------|---|
| Accessibility/Patency        | ●  | ●                   | ●                               | ●   |
| Security/safety              | -  | ●                   | -                               | -   |
| Convenience/Amenity          | ●  | ●                   | ●                               | ●   |
| Activity                     | ●  | ●                   | -                               | -   |
| Aesthetics                   | -  | -                   | ●                               | -   |
| Rationality /Appropriateness | -  | -                   | ●                               | ●   |
| Diversity                    | -  | -                   | ●                               | ●   |
| Quality                      | -  | -                   | -                               | ●   |
| Sociability                  | ●  | -                   | -                               | -   |

Combining the prior studies and the environmental analysis of OOOZOOO, seven major upper-level landscape elements, and 31 lower-level elements were initially identified. These are plants (variety, density, aesthetics, quantity, rationality); road & floor pavement (accessibility, convenience, safety, rationality); sculpture (quantity, density, accessibility, aesthetics, rationality); bench (quantity, density, convenience, accessibility, safety); lighting (rationality, density, brightness); illumination (quantity, density, aesthetics, color, brightness); board (quantity, readability, convenience, rationality).

[Table 3-4] Selection of Landscape Elements and the Description

| Upper-level Elements       | Lower-level Elements | Description and Reason of Selection  |
|----------------------------|----------------------|--|
| Plants (Trees and Flowers) | Variety              | Depending on the visitor's preference for the type of plant, this can affect the visitor's overall satisfaction with the plant.  |
|                            | Density              | Affected by space, the feeling of oppression and emptiness can significantly affect the sense of spatial experience.   |
|                            | Aesthetics           | The harmony and beauty of plants are essential to a garden.  |
|                            | Quantity             | The essential elements of objective existence.   |
|                            | Rationality          | The right place for the different people will affect the experience to varying degrees   |
| Road & Floor Pavement      | Accessibility        | Whether the paths within the garden allow visitors to find their way around easily, are the various spaces connected in such a way as to extend the experience of the visiting visitors. |
|                            | Convenience          | The convenience of being able to reach every space you want to go to.  |
|                            | Safety               | Because of the specific time of day, the unevenness of the road surface during night use, etc., may induce safety problems.  |
|                            | Rationality          | The material or design of the road paving can affect the comfort of the experience.  |
| Sculpture (Character)      | Quantity             | The number of stylized objects in a light theme park is fundamental to capturing visitors' interest.   |
|                            | Density              | A fundamental element of objective presence, the density of the form affects the space available to visitors.  |

|                        |               |   |
|------------------------|---------------|---|
|                        | Accessibility | Interactivity can be enhanced in places that are easily seen or easily accessible.  |
|                        | Aesthetics    | Aesthetics influence the experience, and the illumination in the light theme park can create a beautiful effect. We are enhancing the visual experience for visitors.             |
|                        | Rationality   | It is essential that the placement makes sense and doesn't look out of place in the background.   |
| Bench (Resting space)  | Quantity      | The number determines the reserve capacity of the garden for visitors.  |
|                        | Density       | The density of the Bench determines whether the garden can evenly accommodate the resting needs of visitors.  |
|                        | Convenience   | Is the Bench in the right place and can be seen at a glance.  |
|                        | Accessibility | The design of the Bench, whether aesthetically pleasing or comfortable, will affect the visitors' use.  |
|                        | Safety        | Security at Light theme park is essential to support operations.  |
| Lighting (Streetlight) | Rationality   | The essential elements of objective existence.  |
|                        | Density       | The density of street lighting means that areas without illumination or dimly lit spaces with less description can be illuminated.  |
|                        | Brightness    | The essential element of objective presence. As it is a night-time activity area, the brightness of the street lighting will have an impact on the visual experience of visitors. |

|                                   |             |   |
|-----------------------------------|-------------|---|
| Illumination<br>(Light Sculpture) | Quantity    | Illumination is the most critical part of the light theme park, and quantity is an essential element of objective presence.   |
|                                   | Density     | The density of illumination also plays a vital role in the visual experience. Sparse or dense descriptions can be counterproductive to otherwise good illumination. |
|                                   | Aesthetics  | The aesthetics of the Illumination is essential to the light theme park and is one of the most critical elements of the garden's competitiveness.                   |
|                                   | Color       | The color palette determines whether it will catch the eye of the visitors. And the colors should match the aesthetic of the majority of people.                    |
|                                   | Brightness  | An essential element of objective presence, illumination creates a sense of atmosphere in the dark and enhances the comfort of visitors.                            |
| Board                             | Quantity    | Quantity is an essential element of objective existence.  |
|                                   | Readability | Precise expression is the only way to reflect the board's presence better.  |
|                                   | Convenience | Could it be made clear that space access would be more convenient.  |
|                                   | Rationality | The right location can enhance the experience of visitors to the park.  |

### 3.3.2. Pre-questionnaire Survey

During the second field visit, a pre-questionnaire survey was conducted with eight OOOZOOO visitors and in-depth interviews with OOOZOOO managers. The following are the results of the analysis of the pre-questionnaire. Firstly, Plants: The average score (out of 5) for the five lower-level elements of the Importance of Plants was too low. These are Variety (2), Density (2.2), Aesthetics (3.2), Quantity (2.8), and Rationality (3.6). Lighting: 4 out of 8 respondents raised questions about this item. The main question is: with illumination being so eye-catching, the presence of lighting is considerably reduced. As a result, it wasn't easy to notice the lighting during visits to OOOZOOO. There is also a tendency to confuse illumination and lighting. Secondly, road & floor pavement, Sculpture, Illumination, and Board have no significant numerical anomalies. The OOOZOOO administrators were satisfied with the results, so no significant changes were made to these items. Finally, the Bench has no major problems with the numerical results. However, in the course of the pre-questionnaires, there were often no places to do them. Some unevenness in the distribution of the rest space can be detected. Therefore, a reconsideration will be made on Bench.

### 3.3.3. Finalisation of Landscape Elements

Combining interviews with OOOZOOO managers and the results of a preliminary questionnaire survey of 8 OOOZOOO visitors were analyzed. Deleted plants (variety, quantity) and bench (quantity, density, safety); lighting (density) illumination (density); board (rationality) added lighting (safety); illumination (rationality);

[Table 3-5] Selection of Deleted Landscape Elements and the Reasons

| Upper-level<br>landscape<br>Elements | Deleted<br>Lower-level<br>Elements | Reason of Deletion  |
|--------------------------------------|------------------------------------|---|
| Plants (Trees<br>and flowers)        | Variety                            | Plant species are difficult to distinguish at night, so plant species are not valuable for satisfaction assessment.   |
|                                      | Quantity                           | Considering the overall landscape setting of the garden, the number of plants is to some extent influenced by thin objective factors, and there would be some difficulty in carrying out a satisfaction assessment. For this reason, the quantity item has been removed to retain density.            |
| Bench<br>(Resting space)             | Quantity                           | Due to the garden site factor, there are more benches near the light show and cafe. Other factors are more likely to influence subjective judgment.   |
|                                      | Density                            |   |
|                                      | Safety                             | Many other factors influence the safety of a resting space (bench). If one were to evaluate the safety of the seats alone, this would be contrary to the concept of landscape elements, and the definition would be somewhat ambiguous. This was also questioned during the pre-questionnaire survey. |
| Lighting<br>(Streetlight)            | Density                            | Too much objectivity to be evaluated by subjective judgment.  |
| Illumination<br>(Light Sculpture)    | Density                            | There is some overlap with the concept of quantity, so quantity is retained, and density is removed.  |
| Board                                | Rationality                        | The concept covers a wide range of possibilities, and the interviewers had difficulty understanding the questionnaire.  |

[Table 3-6] Selection of Added Landscape Elements and the Reasons

| Upper-level<br>landscape<br>Elements | Added<br>Lower-level<br>Elements | Reason of Addition  |
|--------------------------------------|----------------------------------|---|
| Lighting<br>(Streetlight)            | Safety                           | The primary function of street lighting is to illuminate. During nighttime activities, lighting can be seen as a bit of security.   |
| Illumination<br>(Light sculpture)    | Rationality                      | Although illumination can be dazzling in a night-time space if it is too densely or haphazardly distributed, it can lead to several similarly unattractive problems. Therefore, it is essential to be appropriate and sensible. |

Finally, it was decided to evaluate and analyze the importance and satisfaction of the following seven upper-level landscape elements and 25 lower-level elements: plants (density, aesthetics, rationality); road & floor pavement (accessibility, convenience, safety, rationality); sculpture (quantity, density, accessibility, aesthetics, rationality); bench (convenience, accessibility); lighting (rationality, safety, brightness); illumination (quantity, rationality, aesthetics, color, brightness); board (quantity, readability, convenience).

## Chapter4. Satisfaction Evaluation and Analysis of Landscape Elements of Light Theme Park

### Section 4.1. Importance Performance Questionnaire

#### 4.1.1. Summary of the Questionnaire Survey

This questionnaire is divided into three main sections. The first part is to find out the basic information of the respondents, including their gender, age, peers, mode of transportation, and the way they know Starlight Garden OOOZOOO. The second part is the evaluation of the importance and satisfaction of the landscape elements of the light theme park, mainly the evaluation of the matter and satisfaction of the seven landscape elements, including plants, road & floor pavement, sculpture, bench, lighting, illumination, and board. The evaluation of the importance and satisfaction of the seven landscape elements. Respondents were asked to rate 25 questions on the seven landscape elements, as shown in the figure. There were five answers for importance, namely critical, vital, average, unimportant, and very unimportant, and five for satisfaction, namely very satisfied, satisfied, average, unsatisfied, and very unsatisfied. From high to low, five is very important/very satisfied, and one is very unimportant/very dissatisfied. The third part of the survey was to investigate visitors' overall satisfaction with Starlight Garden OOOZOOO and their intention to revisit. This was extended to other night-time experiences. Scores of 5, 4, 3, 2, and 1 were assigned from highest to lowest (refer to Appendix for details)



| Importance                     | Landscape elements | Performance    |
|--------------------------------|--------------------|----------------|
| Plants (Trees and Flowers)     |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Density            | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Aesthetics         | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Rationality        | 1□ 2□ 3□ 4□ 5□ |
| Road & Floor Pavement          |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Accessibility      | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Convenience        | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Safety             | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Rationality        | 1□ 2□ 3□ 4□ 5□ |
| Sculpture (Character)          |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Quantity           | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Density            | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Accessibility      | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Aesthetics         | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Rationality        | 1□ 2□ 3□ 4□ 5□ |
| Bench (Resting Space)          |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Convenience        | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Accessibility      | 1□ 2□ 3□ 4□ 5□ |
| Lighting (Streetlight)         |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Rationality        | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Safety             | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Brightness         | 1□ 2□ 3□ 4□ 5□ |
| Illumination (Light Sculpture) |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Quantity           | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Rationality        | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Aesthetics         | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Color              | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Brightness         | 1□ 2□ 3□ 4□ 5□ |
| Board                          |                    |                |
| 1□ 2□ 3□ 4□ 5□                 | Quantity           | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Readability        | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□                 | Convenience        | 1□ 2□ 3□ 4□ 5□ |

[Figure 4-1] Importance Satisfaction Questionnaire

#### 4.1.2. Progress of Questionnaire Survey

The questionnaire survey took the form of a field distribution questionnaire and interviews. A pre-survey was conducted after the initial design of the questionnaire, with 12 visitors to the lighting theme park and eight managers and staff of the lighting theme park being questioned and interviewed. The data obtained from the pre-survey and the respondents' comments led to the deletion and addition of some categories, resulting in the identification of seven landscape elements and 25 question items. Questionnaires and interviews were conducted with over 65 visitors to Starlight Garden OOOZOOO Park on two Friday evenings in November after 6 pm. In the end, 60 valid questionnaires and ten valid interviews were received.

#### 4.1.3. Statistical Analysis of Basic Information

##### 1) Basic information of the respondents

[Table 4-2] Results of Gender Data of Questionnaire Respondents

| Gender |           |             |
|--------|-----------|-------------|
|        | Frequency | Percent (%) |
| Male   | 29        | 48.3        |
| Female | 31        | 51.7        |
| Total  | 60        | 100         |

[Table 4-3] Age Data Results of Questionnaire Respondents

| Age                      |           |             |
|--------------------------|-----------|-------------|
|                          | Frequency | Percent (%) |
| under the age of ten     | 2         | 3.3         |
| 11~20 years old          | 2         | 3.3         |
| 21~30 years old          | 11        | 18.3        |
| 31~55 years old          | 38        | 63.3        |
| 56 years of age or older | 7         | 11.7        |
| Total                    | 60        | 100         |

According to the survey statistics, the percentage of female respondents to the questionnaire was 51.7%. This is comparable to the 48.7% of males. (As in the table) In terms of age (as in the table), the number of respondents under ten and the number of respondents aged 11 to 20 were each 3.3%. Most of them are concentrated in the middle age group between 31 and 55 years of age, with a high percentage of 63.3%. Young people aged 21 to 30 years and those aged 56 years and above accounted for 18.3% and 11.7% of the total sample, respectively. This shows that the majority of visitors of the park are middle-aged and young people. In fact, there was also a very high percentage of preschoolers on site. As most of the children could not answer the questions on their own, they could not be reflected in the questionnaire results again.

[Table 4-4] Companion of Questionnaire Respondents

| Companion      |           |             |
|----------------|-----------|-------------|
|                | Frequency | Percent (%) |
| Family         | 39        | 65          |
| Friend         | 16        | 26.7        |
| Group Activity | 5         | 8.3         |
| Total          | 60        | 100         |

Most people who visit the park are organized as families, as revealed by observations and interviews with park managers. Parents and children are the most common combination in the park, but there are also many couples and friendships. Before covid19, many groups of domestic and international visitors were doing group sightseeing and group activities. According to the results of the survey statistics (as shown in the graph), the sample size of those who traveled with their families was as large as 65%. The proportion of people traveling with friends and lovers was 26.7%. The remaining 8.3% of the sample were all group activities.

## 2) Basic Information About the Use of OOOZOOO by Respondents

The park's location is not in the city center because most people visit it for nighttime sightseeing. Therefore, the vast majority of visitors travel by car. A small percentage also travel by public transport or taxi. As the table shows, 95% of those who visit by car do so. The remaining one person (1.7%) took public transport, and two people (3.3%) took a taxi.

[Table 4-5] Transportation of Respondents in the Questionnaire

| Transportation        |           |             |
|-----------------------|-----------|-------------|
|                       | Frequency | Percent (%) |
| Public Transportation | 1         | 1.7         |
| Taxi                  | 2         | 3.3         |
| Car (Driving)         | 57        | 95          |
| Total                 | 60        | 100         |

As the table shows, 40% (24 people) searched for the park on their own for nighttime sightseeing. 35% (21 people) learned about the park through online publicity and visited the park further. Of these, 20% (12) had been referred to the park by an acquaintance. Due to its location, the park is part of a highway rest stop. So it was expected that many people driving through would visit the park. However, according to the questionnaire results, the number of visitors in this part of the park was somewhat lower than expected—only 5% of the total sample (3 people).

[Table 4-6] Way to Knew about OOOZOOO of Respondents

| Way to Know OOOZOOO          |           |             |
|------------------------------|-----------|-------------|
|                              | Frequency | Percent (%) |
| Find by Self                 | 24        | 40          |
| Internet (SNS) Promotion     | 21        | 35          |
| Recommended by Acquaintances | 12        | 20          |
| Stumbled Upon on the Way     | 3         | 5           |
| Total                        | 60        | 100         |

## Section 4.2. Analysis based on the IPA model

### 4.2.1. Reliability and Validity Analysis

#### 1) Reliability Analysis

[Table 4-7] Reliability Statistics of Questionnaire

| Reliability Statistics   |                  |            |
|--------------------------|------------------|------------|
|                          | Cronbach's Alpha | N of Items |
| Importance & Performance | 0.959            | 50         |
| Importance               | 0.967            | 25         |
| Performance              | 0.941            | 25         |

After the data from the 60 questionnaires were counted, the reliability and validity analyses were first carried out in the importance satisfaction section. Reliability analysis was used to measure the reliability of the sample response results, i.e., whether the sample had answered the scale-type items truthfully. (SPSSAU) is an estimate of the degree of consistency of a measure. Any measure is subject to error, and the smaller the error, the higher the reliability, i.e., the greater the measure's reliability. In this paper, Cronbach's Alpha method was used to test the reliability of the questionnaire results. The reliability coefficient ranges from 0 to 1, with a higher value indicating a higher degree of reliability. When the value of Cronbach's Alpha is greater than or equal to 0.9, the reliability of the questionnaire is very high. When the value of Cronbach's Alpha is below 0.5, the reliability of the questionnaire is not up to standard and is not eligible for further analysis. The software SPSS29 analyzed this paper. The results are shown in the table;

the combined Cronbach's Alpha for importance and satisfaction is 0.959, the Cronbach's Alpha for matter is 0.967, and the Cronbach's Alpha for satisfaction is 0.941. All three values are above 0.9. Therefore the questionnaire is highly reliable and ready for further data analysis.

## 2) Validity analysis

[Table 4-8] Validity Statistics of Questionnaire

| KMO and Bartlett's Test                         |                    |            |             |
|---|--------------------|------------|-------------|
|   |                    | Importance | Performance |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy |                    | 0.846      | 0.762       |
| Bartlett's Test of Sphericity                   | Approx. Chi-Square | 1743.157   | 1273.577    |
|   | df                 | 300        | 300         |
|   | Sig.               | <.001      | <.001       |

Validity is used to measure the soundness of the design of the question items (quantitative data). (SPSSAU) In this paper, the questionnaire results were also analyzed for validity using SPSS29. The KMO test and Bartlett's Test of Sphericity analyzed the questionnaire data. kMO values ranged from 0 to 1. A kMO value more excellent than 0.8 indicated good validity. A KMO value between 0.7 and 0.8 indicated a remarkable fact. A significance (p-value) of less than 0.05 means that further analysis can be done. As shown in the table, the KMO value for the critical section of this questionnaire was 0.846, and the KMO value for the satisfaction section was 0.762. Bartlett's Test of Sphericity for both importance and satisfaction showed that the p-value was less than 0.01. In conclusion, the questionnaire

was set up reasonably.

#### **4.2.2. Importance and Performance Results and Comparative Analysis**

##### **1) Comparative Analysis of Importance and Performance of Upper-level landscape Elements between Substrates**

As the table shows, the mean ranking of importance is illumination(4.17) > sculpture(3.99) > lighting(3.94) > road & floor pavement(3.91) > bench(3.90) > plants = board(3.77). The mean ranking of satisfaction resulted in illumination (4.56) > lighting (4.41) > sculpture (4.29) > bench (4.20) > plants (4.18) > road & floor pavement (4.15) > board (4.09). In both importance and satisfaction rankings, illumination is ranked first. The Board is ranked last (7th). The difference in the order of road & floor pavement is more pronounced, with the satisfaction ranking two places below the importance ranking. The remaining elements are tagged with a difference of 1, with no significant fluctuation.



[Table 4-9] Mean Value and Rankings of Importance and Performance of Upper-level Landscape Elements

| Upper-level<br>Landscape Elements | Importance |         | Performance |         | P-I  |
|-----------------------------------|------------|---------|-------------|---------|------|
|                                   | Mean value | Ranking | Mean value  | Ranking |      |
| Plants                            | 3.77       | 6       | 4.18        | 5       | 0.42 |
| Road & Floor Pavement             | 3.91       | 4       | 4.15        | 6       | 0.25 |
| Sculpture<br>(Character)          | 3.99       | 2       | 4.29        | 3       | 0.30 |
| Bench                             | 3.90       | 5       | 4.20        | 4       | 0.30 |
| Lighting<br>(Streetlight)         | 3.94       | 3       | 4.41        | 2       | 0.47 |
| Illumination<br>(Light Sculpture) | 4.17       | 1       | 4.56        | 1       | 0.39 |
| Board                             | 3.77       | 6       | 4.09        | 7       | 0.32 |

Throughout the overall values, each mean value of satisfaction is greater than the mean value of the importance of the corresponding upper-level landscape element. Visitors' satisfaction with each landscape element in the park exceeds the perceived volume. The more significant the difference in satisfaction minus importance, the more satisfied visitors are with the landscape elements, and the more it exceeds the perceived significance and expectation; the smaller the difference, the more visitors are satisfied that the landscape element exceeds the perceived importance and expectation, but is not significantly superior to the other elements. The most significant

difference (0.47) is for illumination, indicating a substantial advantage; the minor difference (0.25) is for road & floor pavement, indicating a need for emphasis and strengthening compared to the other components.

## 2) Results and Comparative Analysis of Overall Importance and Performance

The table below shows the mean values of importance and performance for the overall 25 elements, as well as the ranking of the lower-level elements within the upper-level landscape elements and overall. As the table shows, overall, the mean satisfaction values for all 25 elements are also greater than the mean importance value. That is, visitors' satisfaction with each of the park's landscape elements as a whole exceeded the perceived importance. In the overall ranking, the difference between the importance and performance rankings is greater than or equal to 5 for the following elements: CONVENIENCE (9th in importance, 11th in performance, five places higher in importance than performance) and SAFETY (10th in importance, 18th in performance, eight places higher in importance than performance) in the road & floor pavement rationality (21st in importance, 16th in performance, eight places higher in importance than satisfaction). rationality (21st in importance, 16th in performance , 5th in importance over satisfaction); quantity (14th in importance, 20th in performance , 6th in importance over performance) and rationality (3rd in importance, 9th in performance , 6th in importance over satisfaction) in sculpture; and convenience (15th in importance, 20th in performance, 6th in importance over performance) in bench (15th in importance, 20th in performance , 5th in importance over performance); safety (17th in importance, 12th in

performance, 5th in importance over performance) and brightness (12th in importance, 7th in performance, 5th in importance over performance) in lighting; readability (19th in importance, 14th in performance, 5th in importance over performance) in board (14th in importance, 5th in importance below performance). The next step in the analysis can be carried out. The difference between the importance and performance rankings of the remaining elements is less than five, and the fluctuation is insignificant.

[Table 4-10] Mean Value and Rankings of Overall Importance and Performance

| Upper-level<br>Landscape Elements | Lower-level<br>Elements | Importance |         |         | Performance |         |         |
|-----------------------------------|-------------------------|------------|---------|---------|-------------|---------|---------|
|                                   |                         | Mean value | Ranking |         | Mean value  | Ranking |         |
|                                   |                         |            | Inside  | Overall |             | Inside  | Overall |
| Plants                            | Density                 | 3.40       | 3       | 25      | 4.05        | 3       | 24      |
|                                   | Aesthetics              | 3.83       | 2       | 20      | 4.13        | 2       | 18      |
|                                   | Rationality             | 4.07       | 1       | 7       | 4.37        | 1       | 10      |
| Road & Floor Pavement             | Accessibility           | 3.78       | 4       | 22      | 4.10        | 4       | 22      |
|                                   | Convenience             | 4.03       | 1       | 9       | 4.20        | 1       | 14      |
|                                   | Safety                  | 4.02       | 2       | 10      | 4.13        | 3       | 18      |
|                                   | Rationality             | 3.80       | 3       | 21      | 4.18        | 2       | 16      |
| Sculpture (Character)             | Quantity                | 3.92       | 4       | 14      | 4.12        | 4       | 20      |
|                                   | Density                 | 3.78       | 5       | 22      | 4.08        | 5       | 23      |
|                                   | Accessibility           | 3.95       | 3       | 12      | 4.35        | 3       | 11      |

|                                   |               |      |   |    |      |   |    |
|-----------------------------------|---------------|------|---|----|------|---|----|
|                                   | Aesthetics    | 4.12 | 2 | 5  | 4.47 | 1 | 6  |
|                                   | Rationality   | 4.18 | 1 | 3  | 4.43 | 2 | 9  |
| Bench                             | Convenience   | 3.90 | 1 | 15 | 4.12 | 2 | 20 |
|                                   | Accessibility | 3.90 | 1 | 15 | 4.28 | 1 | 13 |
| Lighting (Streetlight)            | Rationality   | 4.00 | 1 | 11 | 4.45 | 1 | 7  |
|                                   | Safety        | 3.88 | 3 | 17 | 4.33 | 3 | 12 |
|                                   | Brightness    | 3.95 | 2 | 12 | 4.45 | 1 | 7  |
| Illumination<br>(Light Sculpture) | Quantity      | 4.07 | 5 | 7  | 4.48 | 5 | 5  |
|                                   | Rationality   | 4.12 | 4 | 5  | 4.55 | 3 | 3  |
|                                   | Aesthetics    | 4.25 | 1 | 1  | 4.62 | 1 | 1  |
|                                   | Color         | 4.18 | 3 | 3  | 4.55 | 3 | 3  |
|                                   | Brightness    | 4.22 | 2 | 2  | 4.60 | 2 | 2  |
| Board                             | Quantity      | 3.60 | 3 | 24 | 3.92 | 3 | 25 |
|                                   | Readability   | 3.85 | 2 | 19 | 4.20 | 1 | 14 |
|                                   | Convenience   | 3.87 | 1 | 18 | 4.15 | 2 | 17 |

### 4.2.3. IPA Model Quadrant Chart Results

The x-axis of the IPA quadrant chart is Satisfaction; the y-axis is Importance. The first quadrant is Keep up the excellent work, which is the vital part of the strengths; the second quadrant is Concentrate here, which is the weak part; the third quadrant is Low priority, which is low importance and low satisfaction, and can be put in the second place to improve slowly; the fourth quadrant is Possible overkill, which is low importance and high Satisfaction, which can be maintained.

#### 1) IPA Quadrant Chart Result of High-level Landscape Elements

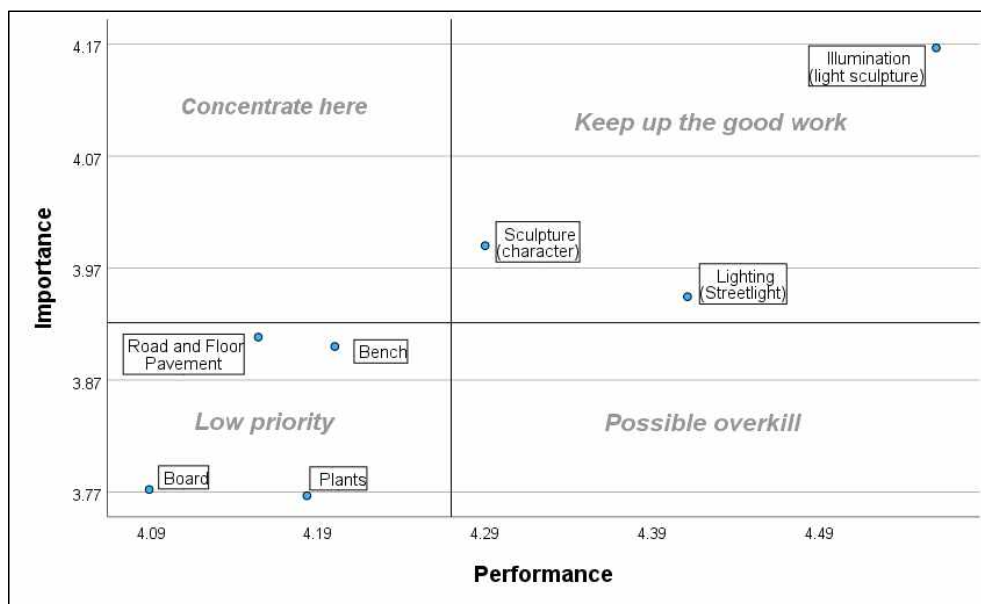


Figure 4-2 : IPA Quadrant Chart Result-1

The diagram shows that the seven landscape elements are distributed in the first three quadrants. Illumination, sculpture, and lighting are located in

the first quadrant. Keep up the excellent work; road & floor pavement, bench, board, and plants are located in the third quadrant—low priority.

## 2) IPA Quadrant Chart Results for Overall Elements

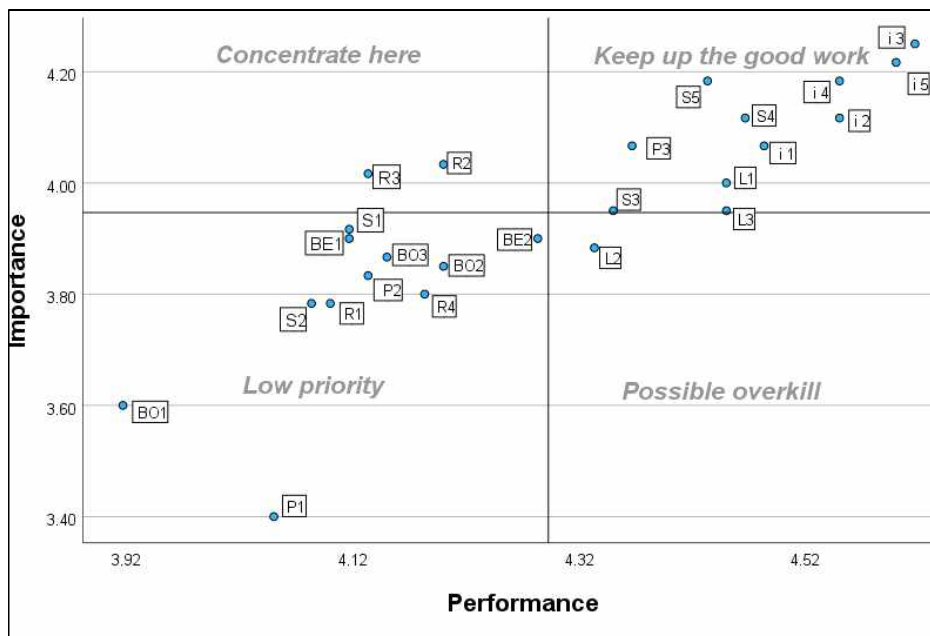


Figure 4-3 : IPA Quadrant Chart Result-2

As shown in the figure, the 25 elements description questions were distributed in quadrants one, two, three, and four. The first quadrant, Keep up the excellent work, has 11 (P3, i1, i2, i3, i4, i5, S3, S4, S5, L1, L2); the second quadrant Concentrate here has 2 (R2, R3); the third quadrant Low priority has 11 (S1, S2, P1, P2, R1, R4, BO1, BO2, BO3, BE1, BE2); quadrant 4 Possible overkill has 1 (L2).

Note: Refer to the table below for the details of the questioned items

[Table 4-11] Element Code

| Upper-level Elements              | Lower-level Elements | Code |
|-----------------------------------|----------------------|------|
| Plants                            | Density              | P1   |
|                                   | Aesthetics           | P2   |
|                                   | Rationality          | P3   |
| Road & Floor Pavement             | Accessibility        | R1   |
|                                   | Convenience          | R2   |
|                                   | Safety               | R3   |
|                                   | Rationality          | R4   |
| Sculpture<br>(Character)          | Quantity             | S1   |
|                                   | Density              | S2   |
|                                   | Accessibility        | S3   |
|                                   | Aesthetics           | S4   |
|                                   | Rationality          | S5   |
| Bench                             | Convenience          | BE1  |
|                                   | Accessibility        | BE2  |
| Lighting<br>(Streetlight)         | Rationality          | L1   |
|                                   | Safety               | L2   |
|                                   | Brightness           | L3   |
| Illumination<br>(Light Sculpture) | Quantity             | i1   |
|                                   | Rationality          | i2   |
|                                   | Aesthetics           | i3   |
|                                   | Color                | i4   |
|                                   | Brightness           | i5   |
| Board                             | Quantity             | Bo1  |
|                                   | Readability          | Bo2  |
|                                   | Convenience          | Bo3  |



#### 4.2.4. Analysis of Landscape Elements Based on IPA Quadrant Map Results

##### 1) Plants

The two of three lower-level elements of plants: density and aesthetics, are in the third quadrant of Low priority, while rationality is in the first quadrant of Keep up the excellent work. Most visitors feel that plants are only a background for nighttime sightseeing, as it is dark and therefore not very visible. Thus, the plants' density and aesthetics do not significantly impact the overall view. However, the placement of the plants directly affects the visitor's experience. In Starlight Garden OOOZOOO, although the rationality of the plants is the dominant part, the plants as a whole are in the low-priority position.

- In Starlight Garden OOOZOOO, there is plenty of room for improvement in the plant's section, but there is no urgency.
- The importance of the plant's section is not very high during the night-time tourism. However, the distribution must be reasonable.

##### 2) Road & Floor Pavement

Of the four lower-level elements of road & floor pavement, Accessibility and Rationality are in the third quadrant; low priority, Convenience, and Safety are in the second quadrant: concentrate here. Because of the darkness, visitors' concerns about safety are deep. This is particularly important for parents traveling as a family because they are concerned about the safety of their children. The park also has many pram visitors, so the demands on the pavement are high. Not only does it need to be

aesthetically pleasing, but it also needs to be level and safe. Even though the road & floor pavement is located in the Low priority section, there is a need to improve the road & floor pavement.

- The road & floor pavement in Starlight Garden OOOZOOO needs to be improved. In particular, there is room for improvement in the accessibility of the routes.
- The roads must be easy to navigate and safe for night-time sightseeing, and the choice of roads and pavement should be made with the visitors' feelings in mind.

### 3) Sculpture

Of the five lower-level elements of Sculpture, Quantity and density are distributed in the third quadrant of Low priority; Accessibility, Aesthetics, and Rationality are distributed in the first quadrant of Keep up the excellent work.

- The Sculpture section of Starlight Garden OOOZOOO is the second most crucial advantage after illumination. A slight adjustment could be made to the number and density.
- The iconic sculptures on the night-time tourism can give visitors a different sense of experience.

### 4) Bench

The two lower-level elements of Bench, Convenience and Accessibility, are in the third quadrant of Low priority. The importance and satisfaction of visitors with the Bench are not high. According to the questionnaire respondents, most visitors have a more increased need for more increased

cities and sightseeing than resting space when they go on night-time tourism.

- The bench section of Starlight Garden OOOZOOO also has ample room for improvement but is not in a hurry.
- The need for a resting space is not as high when sightseeing at night.

## 5) Lighting

Of the three lower-level elements of lighting, Rationality and Brightness are in the first quadrant Keep up the good work; safety is in the fourth quadrant Possible overkill. Lighting is one of the more controversial parts of a lighting theme park. Because there is enough illumination, the brightness is already sufficient. Too many more street lights would affect the visual effect of illumination. So some managers think that lighting has become less important, and in some lighting theme parks there are even very few large illumination lights instead of the usual street lights. However, the managers of Starlight Garden OOOZOOO believe that most visitors have a need to take good pictures while visiting the park. They also consider the safety of visitors at night. Therefore, the overall satisfaction of visitors to Starlight Garden OOOZOOO with the lighting is on the high side.

- The lighting at Starlight Garden OOOZOOO is an advantage over other light theme parks.
- The lighting provides a safe and entertaining experience when visiting at night.

## 6) Illumination

Of the five lower-level elements of Illumination, Quantity, Rationality, Aesthetics, Colour, and Brightness are all in the first quadrant of Keep up

the excellent work. They are at the top of all elements regarding satisfaction and importance. Therefore illumination is the greatest strength of Starlight Garden OOOZOOO.

- The illumination of Starlight Garden OOOZOOO is a core competency that needs to be actively maintained and preserved.
- One or two significant highlights are needed to attract visitors during night-time tourism, and good illumination is a great attraction.

## 7) Board

The three lower-level elements of the board, Quantity, Readability, and Convenience, are all in the third quadrant of low priority. Based on the feedback from the respondents at the time of the questionnaire, most visitors said that the board, like the plant, was not very visible in the dark. Many respondents did not even pay attention to the board and said they needed it to guide them.

- The Starlight Garden OOOZOOO board, although not as essential and satisfactory in the questionnaire results, could be improved in the board section according to the needs of the respondents.
- A board, a signpost, or something like that is still essential when visiting at night.

## Section 4.3. Overall Analysis Based on Satisfaction of Light Theme Park

### 4.3.1 Results and Analysis of Combined Satisfaction and Propensity to Visit

At the end of the questionnaire, 60 respondents were asked about their overall satisfaction with visiting the OOOZOOO night landscape. The mean value of overall satisfaction was 4.38 out of 5. The mean score for the intention to revisit OOOZOOO was 3.70 (out of a total of 5). The mean score for recommending OOOZOOO to an acquaintance was 4.42 out of 5. And the average score for the propensity to visit other nightspots was 4.50 out of 5.

[Table 4-12] Results of Overall Satisfaction in Questionnaire

|   | 5<br>Points                   | 4<br>Points | 3<br>Points | 2<br>Points | 1<br>Point | Average<br>Value |
|---|-------------------------------|-------------|-------------|-------------|------------|------------------|
|   | Number of People / Percentage |             |             |             |            |                  |
| Overall Satisfaction                                  | 31/52%                        | 22/37%      | 6/10%       | 1/2%        | 0/0%       | 4.38             |
| Intention to Use Again                                | 18/30%                        | 21/35%      | 10/17%      | 7/12%       | 4/7%       | 3.70             |
| Willingness to Recommend                              | 34/57%                        | 19/32%      | 5/8%        | 2/3%        | 0/0%       | 4.42             |
| Willingness to Experience<br>Other Night-time Tourism | 38/63%                        | 17/28%      | 2/3%        | 3/5%        | 0/0%       | 4.50             |

### 1) Overall Park Satisfaction > Propensity to Revisit

It is clear from the table that the overall satisfaction of the respondents with OOOZOOO is high, with the vast majority giving a high score of 4 or more (52% gave a score of 5 and 37% gave a score of 4, a total of 89%). However, the intention to revisit was only 3.70 points compared to the overall satisfaction score of 4.38. People were satisfied with the park, but the propensity to revisit was low. According to the real-time feedback at the time of the questionnaire, although many people are willing to visit again, the actual likelihood of reviewing is very low.

### 2) Overall Park Satisfaction < Propensity to Recommend

Similar to overall park satisfaction, the propensity to recommend the park to others was high, with the vast majority of people giving it a high score of 4 or more (57% gave it a 5 and 32% a 4, again totaling 89%), and the high and low scores were about the same for both. However, when looking at the mean scores alone, the average score for overall park satisfaction is slightly smaller than the average score for propensity to recommend. This confirms that the overall satisfaction score of OOOZOOO is more reliable. Moreover, the slight advantage of the mean score for the tendency to recommend shows how much visitors like the park and how competitive and promising OOOZOOO is in the night landscape.

### 3) Overall Park Satisfaction < Tendency to Visit Other Nighttime Landscapes

The average score for the tendency to visit other nighttime landscapes reached a maximum of 4.50 out of 5. A whopping 91% gave a high score of

4 or more. And 63% of respondents gave the highest score of 5. This is the highest percentage of 5 points among all the options. Three possibilities can be inferred from this. Firstly, OOOZOOO has left a good impression on the visitors, so the respondents have raised their expectations for the night view and the light theme park. Secondly, those visiting the night landscape see it more frequently than others who have not. Thirdly, people are gradually expanding the type, spatial extent, and frequency of their visits to the night landscape. Therefore, it reflects that the development of the night landscape has excellent research value and development potential.

#### **4.3.2. Night-time Tourism and Light Theme Park Preference Survey**

##### **1) Interview Content and Process**

After the first round of the questionnaire survey on evaluating light theme park landscape elements to 42 OOOZOOO visitors, based on the preliminary analysis of the questionnaire results (results of the questionnaire for the 42 respondents), the content of the interview on visitor preferences related to OOOZOOO, light theme park, and night landscape was developed, which contained seven major categories of questions (see appendix for details of the interview). After a second questionnaire survey of the remaining 18 visitors out of 60, personal interviews of 7 to 10 minutes each were conducted with 4 of the 18 and 6 other visitors.

## 2) Interview Results and Analysis

[Table 4-13] Results of the Number of OOOZOOO Visits in Questionnaire

| Visit Times         |                      |
|---------------------|----------------------|
| Time                | Respondents No.      |
| The First Time      | 1, 4, 5, 6, 8, 9, 10 |
| The Third Time      | 2                    |
| The Fifth Time      | 7                    |
| More Than Ten Times | 3                    |

Of the ten interviewed, seven were first-time visitors to OOOZOOO, three were repeat visitors, and three were third-time, fifth-time, and ten-plus-time visitors. Combined with the questionnaire survey results on the intention to revisit, it can be inferred that most of OOOZOOO's first-time visitors were first-time visitors.



[Table 4-14] Results of Questionnaire on Intention to Revisit and Reasons for Visiting

| Intention and Reason for Revisit |   |                 |
|----------------------------------|---|-----------------|
| Intention to Visit Again         | Reason  | Respondents No. |
| Yes                              | OOOZOOO changes its decorations frequently, so it feels fresh every time you visit. | 2               |
|                                  | OOOZOOO looks mysterious, and the music is infectious, great for walking.           | 3               |
|                                  | OOOZOOO as a whole is very nice.  | 7               |
|                                  | Kids love this place.   | 8               |
| No                               | Nice photo shoot, but once is enough; no need to come many times.                   | 1,10            |
|                                  | No particular reason to want to visit again.  | 4, 6, 9         |
|                                  | Not very good value for money.  | 5               |

According to the following table, three of the ten people who revisited the park included one respondent whose child enjoyed the park. A total of four people had the intention to review OOOZOOO. Of those who were inclined to visit again, some thought the light theme park was perfect overall; some thought it was suitable for children; some thought it was good for walking, the air was fresh, and you could take off your mask for a while even during

covid19. Of the remaining six, two thought the light theme park was good for taking photos, but they had no reason to visit again after that. Three others felt that the light theme park did not live up to their expectations of what they would like to see again. Therefore, it can be inferred that many visitors to OOOZOOO and light theme parks use light theme parks such as OOOZOOO as a one-off night-time photo opportunity.

[Table 4-15] Answers to the Reasons for Visiting OOOZOOO in the Questionnaire

| Reasons for Choosing to Visit OOOZOOO                             |                 |
|---|-----------------|
| Reason  | Respondents No. |
| There is a vast number of illumination and many with originality. | 1               |
| Great lighting show and landmark.                                 | 2, 7            |
| OOOZOOO is very nice and looks good in photos.                    | 5, 8, 9         |
| Convenient transportation.  | 3               |

In terms of the reasons for choosing OOOZOOO, the results of the interviews confirm the results of the questionnaire in the previous section. Most of them were introduced by acquaintances and found on the internet. The reasons for choosing the light theme park OOOZOOO among the many night-time attractions were, in general, OOOZOOO's strengths of illumination (including the lighting show and the illuminated landmark) and the environment in which to take good photos. During the interviews, visitors were also interested in the night scenery of the light theme park.

[Table 4-16] Answers to OOOZOO Advantages, Disadvantages and Preference Areas in Questionnaire

| Advantages and Disadvantages of OOOZOO & Favourite Areas in OOOZOO |   |                              |                 |
|--|---|------------------------------|-----------------|
| Advantage  | Disadvantage  | Favourite Part in OOOZOO     | Respondents No. |
| Unique illumination of many  | -   | Climbing trail (forest path) | 1               |
| Indoor space available   | Without road signs  | 101 Tunnel                   | 2               |
| Air is fresh   | Influenced by lights from surrounding city buildings                              | lighting show,101 Tunnel     | 3               |
| -  | Influenced by lights from surrounding city buildings;<br>Not good value for money | -                            | 4               |
| Night-time tourism available                                       | Not good value for money  | illumination                 | 5               |
| Clean and comfortable  | The park is too small   | lighting show                | 6               |
| Convenient transportation  | -   | -                            | 7               |
| Unique and beautiful illumination of many                          | -   | lighting show                | 8               |
| -  | Not good value for money  | -                            | 10              |

In the questions about the advantages and disadvantages of OOOZOO, each respondent had a different idea. Among the benefits and favorite spaces, the original OOOZOO features of illumination and light shows were excluded. The interviewees considered the rare sight of the city, the fresh air, the mountains that cannot be climbed at night, etc., as advantages of

OOOZOOO. In contrast, visitors come to OOOZOOO in search of a view that is not found in the city, and the natural environment is broken up by the gradual appearance of city lights and urban buildings. This environment has become a disadvantage for OOOZOOO. Other aspects include the lack of signage in the park and the lack of size of the park.

Based on the results of the IPA model quadrant map of the questionnaire results, interviews were conducted to ask questions about the seven landscape elements, road & floor pavement, which needed improvement, and controversial lighting.

[Table 4-17] Answers to Questionnaire on whether road & floor pavement Needs to be Improved and the Reasons

| Whether Road & Floor Pavement Improvements are Needed |  |                 |
|---|--|-----------------|
| Reason  |  | Respondents No. |
| Yes   | Roads are hard to find.                                      | 2, 9            |
|   | Roads are uneven.  | 8, 10           |
| No  | No particular reason.  | 1,4,5,6,7       |
|   | It's safer than thought , and it doesn't skid when it snows. | 3               |

Firstly, for the section on road & floor pavement. Six out of ten respondents thought no improvements were needed, and four thought improvements were required. The reasons for this were that the park was not well defined and the pavement was not very smooth, especially as many of the visitors to OOOZOOO included parents with prams.

[Table 4-18] Answers to Questionnaire on the Need for General Lighting and the Reasons for It

| Is there a Need for Street Lighting in a Light Theme Park<br>Where There is A Lot of Illumination? |                                      |                 |
|--|--------------------------------------|-----------------|
| Reason   |                                      | Respondents No. |
| Yes  | For safety                           | 8, 9            |
|  | Easy to see and find your way around | 8               |
| No   | illumination is bright enough        | 2, 3, 7         |
|  | A little darker for atmosphere       | 3, 10           |

Then there is the controversial issue of lighting. Three people think that even in a light theme park where illumination is already sufficient, lighting cannot be omitted for safety and walking convenience. Five people think that lighting can be omitted. First of all, the illumination is already sufficient, and as a light theme park, a little darker is more ambient and allows people to immerse themselves in the night landscape.

[Table 4-19] Answers to Questionnaire on Expectations of Night-time Tourism

| What Can You Expect from Other Light Theme Parks or Other Night-time Tourism Venues ? |                   |                 |
|---|-------------------|-----------------|
| Expectation   | Respondents No.   | Number of Times |
| Safety  | 2, 3, 6, 7, 9, 10 | 6               |
| Aesthetics  | 5, 6, 10          | 3               |
| Comfort   | 3                 | 1               |
| Events, Celebrations  | 8                 | 1               |
| Illumination  | 7                 | 1               |
| View From the Top (Outlook)   | 8                 | 1               |

At the end of the interview, the ten interviewees were given a night scenery expectation keyword check, in which the word 'safety' appeared the most frequently six times. Aesthetics came second with three occurrences. Comfort; events and celebrations; illumination; outlook each seemed once. Based on the most frequent word, 'safety,' people are assumed to pay more attention to safety when visiting night scenery. Because it is a night-time event, security is critical. Secondly, the Aesthetics of night scenery is also an essential part of people's expectations.

#### **4.3.3. Summary and Analysis**

##### **1) About Starlight Garden OOOZOOO**

OOOZOOO has a robust geographical convenience as part of the service area. Away from the city center, it is a pleasant environment. In addition, the park has many unique landscape spaces that are rarely found in the urban landscape. Through questionnaires and interviews with visitors to the park, we gained a general understanding of how satisfied visitors to Starlight Garden OOOZOOO are with OOOZOOO and the landscape elements within the garden at this stage. Firstly, OOOZOOO's competitiveness is high regarding overall satisfaction with the park and its propensity to recommend. The fact that the overall satisfaction rate is higher than the intention to revisit shows that there is a need to improve OOOZOOO and that there is potential for development. However, there is a possibility that it will become a 'one-off tourist destination.' Of the seven landscape elements evaluated,

illumination, sculpture, and lighting (streetlight) are the strong points of OOOZOOO. This is, therefore, the core competence of OOOZOOO in the light theme park and the night-time tourism venue. Maintaining this strength will be a must for OOOZOOO. The low rating of importance for bench, board, road & floor pavement, and plants shows that visitors to OOOZOOO pay less attention to the non-special features. At the same time, the performance values for this section are not high, so improvements need to be made slowly. The analysis of the 25 lower-level elements shows that OOOZOOO needs to pay attention to and improve the sections of the road & floor pavement for convenience and safety. The safety and convenience of the road are of particular importance to visitors due to the unique nature of night-time activities, and a safe and convenient environment will improve the experience. In addition, the sculpture, which is the strength of the upper-level landscape element, does not have a high performance in terms of quantity and density of the lower-level elements, so it needs to be emphasized to reinforce the strength of the upper-level landscape element.

## 2) About Light Theme Park

Based on the Starlight Garden OOOZOOO study, personal interviews reveal some of the expectations and orientations of people towards the Light Theme Park. First, illumination and sculpture are the most obvious among the landscape elements of the light theme park. Therefore, sculpture, which expresses the theme of the park, and eye-catching illumination, are one of the most critical factors in the success or failure of a light theme park. Secondly, safety cannot be ignored in night-time spaces. Therefore, the accessibility, convenience, safety, and rationality of the road & floor

pavement must be considered. Furthermore, the low importance of bench, board, road & floor pavement, and plants can be seen in the low expectations of visitors when they visit the light theme park. Finally, lighting (streetlight) is one of the more controversial parts of the light theme park. On the one hand, there is enough illumination to illuminate part of the park, and the dim lighting adds to the mystery and fun of the light theme park; on the other hand, lighting guarantees safety for night-time visitors. Therefore, the rationality and brightness of the lighting (streetlight) need to be carefully considered to ensure overall security.



## Chapter5. Conclusion

### Section 5.1. Research Conclusion

This study focuses on the night-time tourism venue: light theme park, which has been less analyzed in previous studies. And conducted a satisfaction study on the category type of landscape elements in the light theme park. An evaluation system for the satisfaction of landscape elements in light theme parks was developed, and an evaluation of the satisfaction of landscape elements was conducted for Starlight Garden OOOZOOO.

Firstly, this paper has developed a satisfaction evaluation system of landscape elements for the light theme park: Starlight Garden OOOZOOO through literature research, field survey, and the evaluation system of landscape elements for Starlight Garden OOOZOOO. Then a quantitative research method, the questionnaire method, was used to evaluate the visitors' satisfaction with the landscape elements. The evaluation was carried out on 25 lower-level elements of the 7 upper-level landscape elements in terms of the importance and performance of the visitors. The results were analyzed employing IPA (Importance performance analysis), a statistical analysis method. It was found that illumination, sculpture, and lighting (streetlight) are the advantages points of OOOZOOO. In addition, regarding the road & floor pavement, the emphasis should be placed on convenience and safety, which should be improved. In the unique night-time event space, the visitors pay much less attention to the bench, the board, the road & floor pavement, and the plants. Finally, a qualitative research method was used to interview visitors to Starlight Garden OOOZOOO, concluding that OOOZOOO has won

the hearts of visitors with its eye-catching illumination, its unique night-time landscape environment rare in the urban landscape, and its border location. However, in terms of visitors' intention to revisit OOOZOOO, visitors' overall satisfaction with OOOZOOO is high, but visitor stickiness is not high. OOOZOOO has the potential to become a 'one-time tourist destination.' Therefore, there is a need to improve OOOZOOO, and there is potential for development. Last but not least, There is a great deal of interest in the safety and aesthetics of the night-time tourism Venue. The balance between decorative lighting, mainly ornamental, and general lighting (street lighting, etc.), which is primarily safety-oriented, will be a future issue for night-time tourism venues.

The results of the landscape-element evaluation questionnaire and interviews confirm the judgment that the demand for night-time tourism increased in the previous study. The preferences of tourists for night-time tourism and light theme parks mentioned in this paper can be used as a design reference and improvement direction for light theme parks or parks that want to develop night-time tourism. In addition, the landscape evaluation system of the light theme park in this paper can be used as a reference for the evaluation index of landscape elements of night-time tourism venues.

## Section 5.2. Deficiencies and Prospects

There are few studies on light theme parks and evaluating landscape elements in night-time tourism venues at this stage. Due to the subjective nature of the evaluation, the extensive content, and the complexity of the influencing factors, many aspects still need to be explored in depth. Firstly, the satisfaction evaluation index system for the light theme park: there is room for further analysis of landscape elements in this paper. Therefore, future evaluation research must combine theory and practice further to improve the evaluation index system to more comprehensively reflect the indicators of landscape elements affecting visitor satisfaction. Secondly, the questionnaire survey needs to be determined by the subjectivity of the rater, and different subjective perceptions will make the evaluation results deviate to a certain extent. The proportion of children and teenagers among the visitors of the park is very high. As this study's evaluation method is unsuitable for children and teenagers, there are almost no children among the interviewees and very few teenagers. Therefore, developing an all-age assessment of satisfaction with landscape elements may allow for more precise and accurate conclusions. Last but not least, the development of night-time tourism Venues such as light theme park, the impact they will have on night-time tourism, and even whether they will contribute to the night-time economy is exciting areas of research.

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## Appendix

### 인터뷰질문지(빛 테마파크 직원분대상으로)

질문0 :현재 본 공원 이용 사람수(방문량)가 어떻게 됩니까? 낮과 밤, 주중과 주말, 사계절에 따라 이용 사람수(방문량)가 어느 정도 차이가 납니까?

질문1 : 현재 본 공원에서 어떤 직무를 맡고 계십니까? 본 공원에서 일하신 기간이 얼마 정도 되십니까?

질문2 : 다른 빛을 주제로 하는 테마파크에 비교하여 어떤 장점과 단점을 가지고 있다고 생각하십니까?

질문3 : 하루 중 본 공원의 이용도가 낮은 시간대는 언제 입니까?

질문4 : 일반적으로 빛 테마파크 낮의 이용도가 밤의 이용도보다 낮은 것으로 알고 있는데, 낮 이용도가 낮은 것을 문제라고 생각하십니까?

질문5 : 본 공원의 이용도를 높이고 싶은 생각이 있습니까? 아니면 지금이 충분하다고 생각하십니까? 그렇다면 이유는 무엇입니까?

질문6 : 이용도를 높이기 위해서 어떤 개선 방안을 시도해본 적이 있습니까? 있으면 구체적으로 어떤 방식을 해보셨습니까?

질문7 : 개선 방안을 적용해서 이용도가 높아졌습니까? 이용자의 수가 얼마만큼 변화가 있습니까?

질문8 : 본 공원의 이용자들은 어떤 공간을 많이 이용하는 편입니까?

질문9 : 본 공원의 많이 이용하신 공간이 다른 공간보다 어떤 장점을 가진다고 생각하십니까?

질문10 : 본 공원의 조경 개선에 대한 필요성이 있다고 생각하십니까? 있다면 어떤 점이 개선이 필요하다고 생각하십니까?

추가질문11 : 본 공원에서 일반조명(가로등)을 많이 찾을 수 없는데 혹시 이유를 알 수 있습니까?

추가질문12 : 본 공원에서 이용자분께 식물, 벤치, 바닥포장 등 조경적이거나 환경적인 민원사항을 받은 적이 있습니까? 어떤 방법으로 해결을 했습니까?

## 설문조사지 (일반인대상으로)

본 인터뷰는 서울대학교 환경대학원 환경조경학과 샤오안이(SHAO ANYI) 석사과정 학생의 석사 논문을 수행하기 위하여 진행하는 설문조사입니다. 본 연구는 야간관광 활성화의 관점에서 사람들이 야간 광관시 만족도에 영향 미친 조경요소를 평가하고 개선 방안을 제시하고자 합니다.

귀하의 모든 응답 내용은 통계법 제 33조(비밀의 보호)에 의해 보호되며, 연구 이외의 다른 목적으로 사용되지 않을 것임을 약속드립니다. 설문조사에 대하여 다른 문의 사항이 있는 경우 아래 연락처로 연락주시기 바랍니다. 본 설문조사에 참여해 주셔서 감사합니다.

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### 일반사항

다음은 일반사항에 관련 질문입니다. 해당 사항 앞에 체크하여 주시기 바랍니다. 해당 내용은 연구 이외의 다른 목적으로 사용되지 않을 것임을 한 번 더 말씀드립니다.

성별 : ☐ 남 ☐ 여

나이 : ☐만10세 이하 ☐만11~20세 ☐만21~30세 ☐만31~55세 ☐만56세 이상

동행자 : ☐혼자 ☐가족 ☐친구 ☐단체활동

찾아오신 교통수단 : ☐도보 ☐대중교통 ☐택시 ☐자동차 (운전)

공원을 알게된 경로 :

☐스스로 찾음 ☐인터넷(SNS) 홍보 ☐지인 추천 ☐지나가는 길에 우연히 들림

### 조경요소 평가

다음은 연구에 관련 평가 질문입니다. 각 문항에 따라 이용전 생각하신 중

요도 및 이용후의 만족도에 대해서 점수 1~5 점을 매겨 주시기 바랍니다. 5 점은 중요도 및 만족도가 제일 높으며, 1점은 중요도 및 만족도가 제일 낮습니다.

| Importance     | Landscape elements      | Performance    |
|----------------|-------------------------|----------------|
| 식물 (나무,꽃)      |                         |                |
| 1□ 2□ 3□ 4□ 5□ | 식물의 뻗어있는 정도             | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 식물이 아름다운 지              | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 식물이 주변과 어울리는 지          | 1□ 2□ 3□ 4□ 5□ |
| 도로 및 바닥포장      |                         |                |
| 1□ 2□ 3□ 4□ 5□ | 길에서 원하는 방향을 찾기 쉬운 지     | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 편리한 정도                  | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 걸을 때 바닥 재료가 안전한 지       | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 바닥 포장 재료와 디자인           | 1□ 2□ 3□ 4□ 5□ |
| 조형물 (캐릭터)      |                         |                |
| 1□ 2□ 3□ 4□ 5□ | 조형물의 수양                 | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 조형물의 뻗어있는 정도            | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 구경하기 쉬운 위치에 있는 지        | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 조형물의 디자인이 아름다운 정도       | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 조형물이 주변과 어울리는 정도        | 1□ 2□ 3□ 4□ 5□ |
| 벤치 (휴식공간)      |                         |                |
| 1□ 2□ 3□ 4□ 5□ | 휴식공간이 적당한 거리마다 있는 지     | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 휴식공간을 찾기가 쉬운 지          | 1□ 2□ 3□ 4□ 5□ |
| 조명 (가로등)       |                         |                |
| 1□ 2□ 3□ 4□ 5□ | 가로등이 주변과 어울리는 지         | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 가로등의 설치위치가 안전성을 확보하는 정도 | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 가로등 밝기가 적당한 지           | 1□ 2□ 3□ 4□ 5□ |

| 일루미네이션 (빛 조형물) |                        |                |
|----------------|------------------------|----------------|
| 1□ 2□ 3□ 4□ 5□ | 일루미네이션의 수량             | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 주변과 어울리는 지             | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 디자인이 아름다운 정도           | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 일루미네이션의 색깔             | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 일루미네이션의 밝기             | 1□ 2□ 3□ 4□ 5□ |
| 안내판            |                        |                |
| 1□ 2□ 3□ 4□ 5□ | 안내판의 수가 적당한 지          | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 안내판 내용이 이해하기 쉽게 적혀있는 지 | 1□ 2□ 3□ 4□ 5□ |
| 1□ 2□ 3□ 4□ 5□ | 안내판을 찾기 쉬운 위치에 있는 지    | 1□ 2□ 3□ 4□ 5□ |

### 전체적인 만족도

다음은 연구에 관련 전체적인 평가 질문입니다. 해당질문에 점수 1~5 점을 매겨 주시기 바랍니다. 5점은 제일 높으며, 1 점은 제일 낮습니다.

별빛정원우주를 이용하신 후에 전체적인 만족도 :

□ 1점      □ 2점      □ 3점      □ 4점      □ 5점

별빛정원우주를 다시 이용하실 의향의 정도 :

□ 1점      □ 2점      □ 3점      □ 4점      □ 5점

별빛정원우주를 다른 사람에게 추천해주실 의향의 정도 :

□ 1점      □ 2점      □ 3점      □ 4점      □ 5점

본 야간관광하신 후에 다른 야간관광 체험하실 의향의 정도 :

□ 1점      □ 2점      □ 3점      □ 4점      □ 5점

## 인터뷰내용 (일반인대상으로)

질문1: 별빛정원우주를 처음 방문하십니까? 재방문하셨다면 몇 번째 입니까?

질문2: 별빛정원우주를 재방문할 의향이 있습니까? 이유가 무엇입니까?

질문3: 별빛정원우주를 알게된 경로가 무엇입니까? 스스로 찾아오셨다면 어떤 이유로 방문하셨습니까? 일루미네이션때문이면 별빛정원우주 안의 일루미네이션이 어떤 매력을 가진다고 생각하십니까? (조형물이면)

질문4: 별빛정원우주에서 도로 및 바닥포장에 대해서 개선이 필요한 점은 무엇이라고 생각하십니까?

질문5: 별빛정원우주가 다른 야간관광장소와 비하여 어떤 장점을 가진다고 생각하십니까? 어떤 공간을 제일 만족하십니까? 또, 어떤 단점을 가진다고 생각하십니까?

질문6: 일루미네이션이 가득한 빛 테마파크에서 일반 조명이 필요하다고 생각하십니까? 이유가 무엇입니까?

질문7: 빛 테마파크 또는 다른 유형의 야간관광장소 방문 시 어떤 기대를 하고 계십니까? (심미성, 안전성, 프로그램의 차별성) 어떤 체험을 제일 원하십니까?

## 초록

### 빛 테마파크 조경요소의 만족도 평가 연구

: 별빛정원우주 대상으로

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야간관광은 관광학에서 최근 등장한 개념으로 새로운 트렌드이다. 사람들은 야간 관광경험에서 주간 관광경험과는 다른 차원의 관광을 경험하게 된다. 즉, 주간에는 볼 수 없었던 도시의 독특한 경관을 야간에 경험할 수 있다. (김성민, 2021)

본 연구의 주요 대상은 전 세계적으로 떠오르고 있는 야간 관광지 종류인 빛 테마파크이다. 한편, 일부 빛 테마파크는 관리가 부실한 상태로 오랫동안 방치되거나 폐쇄되는 경우도 종종 있다. 따라서 빛 테마파크도 공원의 기능을 주로 갖는 것이 중요하다고 보며, 조경의 질적 향상을 통해 방문객 요구에 부응하고 이용만족도를 보장하는 것이 필요하다. 빛 테마파크의 조경 개선은 테마파크의 주제를 향상할 수 있을 뿐만 아니라 휴식 공간으로서의 공원 역할을 잃지 않을 수 있다. 또한, 빛 테마파크의 공간을 최대한 활용하여 방문객들이 문화 및 엔터테인먼트를 경험할 수 있도록 도울 것이다. 한편, 야간관광은 어두운 환경 특성상 조경요소가 방문객 만족도에 미치는 영향이 적다고 보는 것이 논리적인데, 이는 테마파크 조성 시 조경요소를 간과할 수 있다고 볼 수 있는 반증이기에 연구가 필요함을 의미한다.



본 연구는 먼저, 평가지표 제도의 기본 원리를 파악하고, 테마파크 직원과의 인터뷰 결과 및 예비 설문 결과를 통해 별빛정원우주의 조경 상황을 결합하여 조경요소의 평가지표를 선정하였다. 다음으로, 별빛정원우주 방문객을 대상으로 조경요소의 중요도 및 만족도를 평가하는 설문조사를 실시하였다. 그 후, IPA 모델을 기반으로 설문 결과를 분석하였으며, 이 중 IPA 모델 결과의 4분면을 주로 분석하였다. 마지막으로, 별빛정원우주에 대한 의식과 야간 관광지에 기대하는 점을 알아보고 분석 정리하기 위해 일부 방문객을 대상으로 짧은 인터뷰를 진행하였다.

본 연구는 빛 테마파크의 조경요소를 개선하기 위해 해야 할 일과 빛 테마파크에 대한 방문객의 선호도 및 기대치를 파악하여, 빛 테마파크 방문객의 만족도를 높이는 것을 목적으로 한다. 이는 야간관광 활성화의 기반이 될 수 있다. 또한, 빛 테마파크 계획 시 조경요소 설계에 대한 참조를 제공할 수 있다.

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주요어 : 빛 테마파크 , 야간관광지, 조경요소 , 만족도평가, IPA모형

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