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Constructing a servicescape quality scale for amusement parks in Taiwan

Joshua Chang

Department of Marketing and Service Management, Chienkuo Technology University No.1, Chiehshou North Road, Changhua City 500, Taiwan.
Email: joshua0326@gmail.com



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ABSTRACT

In response to the growing demand for enhanced visitor experiences in a more competitive environment, this study aims to develop a Servicescape Quality Scale specifically for Taiwanese amusement parks. Using a mixed-methods approach, the research begins by identifying key servicescape attributes through focus group discussions and expert interviews. We then validated these key servicescape attributes through surveys from 300 visitors across 24 leading amusement parks, ensuring the reliability and relevance of the scale. The result validates five critical dimensions that shape the servicescape: aesthetics, ambient conditions (or surrounding environment), space function, wayfinding, and cleanliness. These dimensions are crucial in influencing visitors' satisfaction and eliciting behavioral responses such as revisiting and recommending the park. These findings serve as a crucial framework for amusement parks to assess and enhance their service environments, potentially leading to significant improvements in the overall visitor experience. By focusing on these dimensions, park managers would attain focused improvements that are closer to the expectations of the visitors, thus securing significant gains within the respective service landscapes. In addition, park managers can use the scale as a diagnostic tool to pinpoint potential shortcomings. In addition, the scale allows benchmarking at a wider industry or competitive level. The hypothesized result, given the aforesaid Servicescape Quality Scale, should translate into visitors' satisfaction, repeat patronage, and long-term customer loyalty—all factors that sustain the profitability of the amusement parks within Taiwan.

Contribution/Originality: This study uniquely constructs a Servicescape Quality Scale specifically for Taiwanese amusement parks, addressing a critical gap in evaluating service environments in this sector. By identifying and validating five key dimensions, it provides actionable insights for enhancing visitor satisfaction and loyalty, fostering sustainable growth in Taiwan's competitive tourism industry.

1. INTRODUCTION

The swiftly advancing economy of Taiwan has experienced a significant transition from conventional industries to a thriving tourism service sector. Public attitudes toward leisure tourism have undergone considerable transformation, influenced by governmental efforts aimed at diversifying and expanding the industry. Among the most noticeable innovations is the development of entertainment parks, which incorporate various forms of recreation, education, and enjoyment into diverse and complex business systems. Specially designed to host a wide range of themed activities, these amusement parks reflect the shift in Taiwanese consumers, who now prioritize an interesting and enjoyable experience while learning more.

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However, in today's fiercely competitive entertainment business, amusement parks feel the high burden of change and differentiation. Traditional methods such as pricing, advertising, or product enhancements are no longer sufficient. As Baker, Levy, and Grewal (1992) commented, the tangible environment, "servicescape," is becoming a major differentiator. Servicescape, when considering the context of amusement parks, is much more than a backdrop; it considerably influences consumer perceptions of quality and builds unique experiences through which these organizations can realize differentiation. The development of a Servicescape Quality Scale specific to Taiwanese amusement parks is, therefore, desirable but quite imperative in enhancing visitor experiences and commanding sustainable loyalty.

The servicescape, which refers to the tangible service environment, significantly influences consumer behavior and shapes their perceptions of service quality. Therefore, with the rapid growth of the amusement park industry in Taiwan, it is quite urgent to establish a valid and reliable measure of the quality of the servicescape. Despite the widespread recognition and application of the SERVQUAL model by Parasuraman, Zeithaml, and Berry (1988) across various service industries, it fails to meet the specific requirements of amusement parks. Given the unique operational characteristics and visitor expectations of amusement parks, a more customized tool is necessary to effectively capture the unique elements influencing the visitor experience.

In this regard, Chang (2016) examination presents a clear issue, as it was the quality of the servicescape that determined customer satisfaction and subsequent loyalty within the context of amusement markets. Therefore, we understood that an attractive servicescape not only enhances customers' evaluations of service quality, but also boosts the likelihood of favorable customer retention and referrals. Thus, the construction of a Servicescape Quality Scale suitable for Taiwanese amusement parks is in this light not just desirable but also a health issue. The presence of such a scale would enable park managers to be able to plan the most effective strategies in enhancing customer experience and the brand's loyalty for the long term.

Despite the widespread recognition of servicescape as a determinant of visitor experiences, the research literature still lacks a dedicated measurement scale specifically designed for amusement parks in Taiwan. Existing methodologies, such as that of SERVQUAL, fall short of capturing the peculiar needs of the given industry, which leaves park managers without a beneficial tool to measure and improve their service environments (Parasuraman et al., 1988). To address this void, this study develops a Servicescape Quality Scale that will be beneficial for amusement park managers in evaluating and improving their service performance so as to increase visitors' satisfaction and ensure loyalty.

This research is guided by a primary question: "What are the integral elements of servicescape quality that should be incorporated into a measurement scale adapted for amusement parks in Taiwan? " The structure of this paper is presented in response to this question and is outlined as follows: The literature review delves into past studies on servicescape and its influence on customer satisfaction and loyalty. The methodology section outlines the mixed-method approach adapted to create and validate the scale. The results section presents the findings of the exploratory and confirmatory factor analysis, while the discussion covers practical implications for the managers of amusement parks. The conclusion wraps up with the key findings and the recommendations for further studies.

2. LITERATURE REVIEW

2.1. Servicescape Quality

According to Bitner (1992) servicescape deals with the physical surroundings within which the services are provided or delivered. These include the layout of the space, its lighting, color, acoustic properties, and level of cleanness, texture, and comfort. Since its introduction, the term has garnered significant attention from both academic and practical sectors. The methodology that forms the core of this discussion is the S-O-R (Stimulus-Organism-Response) concept, which states that the environment acts as a stimulus that provokes a thought and emotion that involves actions, all of which eventually determine the consumers' overall satisfaction and loyalty

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towards the organization (Robert & John, 1982). Many within this framework have shown the interrelationships between service quality dimensions and consumers' perceived value, purchase intentions, and loyalty to the brand.

In this case, environmental stimulation is of great importance as it is relevant to the extent of the visual and physical engagement afforded by the servicescape (Mattila & Wirtz, 2008). Moreover, an expected interaction is the emotional response, which denotes the degree to which a specific environment, like the servicescape, evokes emotions like excitement or calmness. Higher satisfaction levels and greater intentions to revisit are often associated with these types of emotional reactions (Lin & Huang, 2012). Furthermore, the influence of servicescape quality on consumer behavior might vary concerning the type of service provided. For example, Kim and Moon (2009) demonstrated how the servicescape influences fine dining experiences, yet has no influence on casual dining experiences. These findings indicate that service providers must tailor their servicescapes in a way to efficiently meet customer expectations.

Nevertheless, there is ongoing debate about the relative importance of servicescape quality in relation to pricing and overall service quality, among other factors, and the most effective methods for evaluating it (Wakefield & Blodgett, 1996).

2.2. Servicescape Quality in Amusement Parks

Amusement parks are important places for leisure, and the servicescape enhances the overall customer experience. The combination of physical structures, facilities, and atmosphere creates an immersive experience for visitors. Many studies have already investigated this interrelation among the variables. Wu, Li, and Li (2018) for instance, claim that physical spaces that are well-designed increase visitor experience through both sensory and social interactions. Furthermore, they assert that the careful design of the servicescape is crucial and should be the primary consideration when constructing a park. For the same reason, Başarangil (2018) argued that the servicescape plays a significant role in shaping visitors' emotions and behavioral intentions, which in turn leads to revisits and recommendations.

Park, Back, Bufquin, and Shapoval (2019) also confirmed that servicescape is of significant importance in improving customer satisfaction and emotions, the factors that make visitors repeat their behavior. Lin, Gursoy, and Zhang (2020) further illustrated that there is a relationship between servicescape quality and action performed by a visitor, but this relationship is mediated by emotions, and that such emotions are important in creating satisfaction and loyalty in the visitors. However, all these works demonstrate one unified conclusion: servicescape is an important concept in the management of amusement parks. A well-designed servicescape not only enhances the visitor experience but also boosts satisfaction and encourages repeat visits, contributing to long-term loyalty.

2.3. Servicescape Quality and Customer Satisfaction

The quality of servicescape significantly influences customer satisfaction and loyalty and is vital to the successful management of customer relations. Numerous investigations have confirmed that service environments can enhance the perception of quality, often in an unnoticed manner. The service in question and its surrounding conditions shape these perceptions (Steenkamp, 1990). For example, Bitner (1992) and Wakefield and Blodgett (1996) research provides insight into how environmental stimuli influence the formation of general service quality judgments. Parasuraman, Sheridan, and Wickens (2000) have noted that the process of perceived service quality involves numerous dynamics, including the customers' expectations and the quality of the actual services provided. Furthermore, artificial factors such as music, shining light, and scent can enhance emotional arousal during various stages of the service, thereby influencing buying tendencies (Bonnin & Goudey, 2012). Many scholars, such as Demoulin and Willems (2019) and Jin, Lee, and Lee (2015). Reimer and Kuehn (2005) hold the belief that the servicescape and its various aspects reinforce customer service. According to Milman (2001) those who visit an amusement park do so not only for a non-kinetic experience but also to feel good mentally, which offers a break

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from the normal routine. Put differently, this quote suggests that the growing number of visitors to amusement parks necessitates a more holistic view of service delivery. Therefore, this research aims to develop a tool for evaluating the servicescape quality in amusement parks, with the goal of comprehending the relationship between the service environment, perceived quality, and customer satisfaction, thereby offering valuable insights for industry implementation.

2.4. Hypothesis Statement

Since the purpose of the study was to develop a Servicescape Quality Scale adapted for amusement parks in Taiwan, it is essential to examine the key dimensions that impact visitor satisfaction and behavior. Therefore, the following hypothesis can be suggested:

H_1: Aesthetics, ambient conditions, space function, wayfinding, and cleanliness are the identified dimensions of servicescape that would be the valid constructs for assessing servicescape quality in Taiwanese amusement parks.

This hypothesis suggests that each dimension embodies a unique and quantifiable element of the overall servicescape experience. We expect these dimensions to reveal fundamental elements from both the physical and operational environments of amusement parks. Given this, we will conduct both exploratory and confirmatory factor analyses to ascertain the statistical significance of the dimensions and their substantial contribution to the overall model. The hypothesis will be that these dimensions are able to capture the quality of the servicescape as perceived by park visitors and hence support their importance in light of Taiwanese amusement parks.

3. METHODOLOGY

3.1. Preliminary Measurement Items

Various researchers have contributed distinct perspectives on the essential components for measuring service quality in amusement parks. Foundational studies by Holbrook (1994); Bitner (1992); Wakefield and Blodgett (1994); Wakefield and Blodgett (1996) and Newman (2007) have been critical in identifying relevant attributes for this domain. The current study adopted 22 attributes from these works, which included aesthetics, environmental factors, and spatial arrangements. Additionally, Kim and Moon (2009) identified 15 measurement items, including air quality, noise levels, and space functionality, and incorporated them into the item generation process.Wakefield and Blodgett (1994) study on key amusement park service features added 25 items, of which 10 were deemed relevant for this research. This exclusion left 47 service features for the study.

3.2. Focus Group Interviews

Following qualitative approaches outlined by Bowen (2009) and Ryan (1995) focus group interviews were conducted to explore customer satisfaction variables within amusement parks. Three focus groups were organized, with each session involving 10 participants, comprising 13 males and 17 females aged between 25 and 50. A notable 83.3% of participants had visited an amusement park within the past year, averaging 4.2 visits. The focus group discussions centered on their personal experiences, guided by service sectors from Wakefield and Blodgett (1994) framework, which included entrance/exit areas, attractions, dining facilities, rest areas, and retail spaces. Customer service and cleanliness, identified as critical service quality factors by Bitner (1992) and Holbrook (1994) were also examined. Open-ended questions, such as "What factors influence your evaluation of dining service quality in amusement parks?" were posed. These sessions were recorded, transcribed, and analyzed using Kassarjian (1977) content analysis approach. Two independent graduate students coded the transcriptions into 250 units, later refined into 32 items.

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3.3. Analysis of Existing Amusement Parks

Researchers evaluated services provided by 24 licensed amusement parks in Taiwan, listed by the Tourism Administration in March 2017. The assessment included parks like Yun Fen Paradise, Yi Liu Ocean World, and Liu Fuk Village Amusement Park. The team conducted on-site visits to systematically evaluate various service aspects, including customer service, cleanliness, facility maintenance, and the overall visitor experience. This process yielded practical insights, contributing an additional 12 items to the servicescape quality measurement scale.

3.4. Content Validity

The comprehensive process of reviewing existing literature, conducting focus groups, and analyzing amusement parks culminated in the identification of 91 items. Specifically, 47 items came from literature, 32 from focus group discussions, and 12 from the analysis of parks. To organize these items effectively, Weber (1990) single classification concept was employed. Two judges iteratively reviewed and categorized each unit, refining the list into five distinct service scenario dimensions.

3.5. Item Reduction and Exploratory Factor Analysis

Following Churchill Jr (1979) guidelines, a scale purification process was conducted. Item-to-total correlations were calculated, leading to the elimination of items with low correlations. Principal Component Analysis (PCA) with oblique rotation was applied to identify items that loaded incorrectly or across multiple factors. Items with factor loadings below 0.4, as recommended by Hair, Anderson, Babin, and Black (2010) were removed, reducing the list to 26 items. A screen test supported Exploratory Factor Analysis (EFA), revealing five factors: aesthetics, ambient conditions, space function, way finding, and cleanliness, accounting for 81.02% of the variance. This exhaustive process ensured the scale's practical relevance and statistical robustness, culminating in a reliable and valid measurement tool.

3.6. Scale Development and Implementation

The final set of 26 items was developed into a structured questionnaire utilizing a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree." Supplementary items were added to assess convergent, discriminant, and criterion-related validity, aligning with key servicescape quality dimensions such as aesthetics, ambient conditions, space function, wayfinding, and cleanliness. The arrangement of these dimensions and their respective items is presented in Table 1.

Table 1. Dimensions, items, and sources.

Items	Sources
The architecture of the amusement park has attractive characteristics. The style of the amusement park conforms to the amusement park. The interior decoration of the amusement park has an attractive style. The amusement park is decorated in an attractive fashion style. The color scheme of the walls and floors of the amusement park is attractive.	Holbrook (1994); Maffesoli (1996) and Wakefield and Blodgett (1996)
The air quality in the amusement park is pleasant. The noise level in the amusement park is appropriate. The colors used in the amusement park enhance its appeal. The background music in the amusement park makes it a more enjoyable place. The overall lighting in the amusement park is adequate. The temperature in the amusement park is comfortable. The scent in the amusement park is pleasant.	Bitner (1992) and Kim and Moon (2009)
The spacing between seats in the amusement park's leisure areas allows for straightforward access. The well-crafted amusement equipment adds to the fun of playing. The queue management for the amusement rides is orderly. The ticket booths in the amusement park are convenient for purchasing tickets.	Wakefield and Blodgett (1994)

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Items	Sources
The intersections at the ticket booths in the amusement park are smooth and efficient.	
The walkways between the amusement rides in the park are wide enough for easy passage. The signage around the amusement park provides sufficient guidance, making it simple to find your destination. The entrances and exits of the amusement areas in the amusement park are easy to navigate. The walkways between tables in the amusement park are wide enough for simple passage. The signage around the amusement park provides ample guidance. The environment of the amusement park makes it simple to walk around and find what you are looking for.	Newman (2007) and Kim and Moon (2009)
The staff at the amusement park present a neat and tidy appearance. The restrooms in the amusement park are clean. The surroundings of the amusement park are well-maintained and clean.	Wakefield and Blodgett (1996)

3.7. Model Used and Past Studies

This study collected data through interviews and then analyzed it using partial least squares-structural equation modeling (PLS-SEM). Scholarly research frequently employs PLS-SEM, a robust statistical instrument, to formulate predictive models or examine intricate interrelations among latent constructs (Hair et al., 2010). This methodological approach was selected due to the study's emphasis on the development of a Servicescape Quality Scale specifically for amusement parks in Taiwan. LS-SEM is different from traditional covariance-based SEM because it maximizes the explained variance of the dependent variables. This makes it ideal for exploratory studies with formative indicators (Hair et al., 2010). Unlike covariance-based SEM, which emphasizes model fit, PLS-SEM does not rely on multivariate normality and is effective with smaller sample sizes, producing robust results even with non-normal data distributions (Kaplan & Saccuzzo, 2001).

Contrary to previous studies that relied on purely exploratory approaches or more simple forms of factor analysis, the current investigation tests the structure of the scale in a more systematic way by applying PLS-SEM. In this case, PLS-SEM helped us look at the measurement and structural models to find that things like cleanliness, aesthetics, ambient conditions, space function, and way finding are statistically significant and have strong predictive validity, as shown by Bitner (1992) and Reimer and Kuehn (2005). This conceptual approach further strengthens the scale development process so that the Servicescape Quality Scale is reliable and valid for Taiwanese amusement parks. Moreover, it offers more profound insights regarding visitor experiences, thereby yielding a superior comprehension relative to conventional analytical methods (Chang, 2016; Kim & Moon, 2009).

4. RESULTS

4.1. Sample Collection, Pre-Test, and Participant Profile

The data collection process was conducted through individual interviews, adhering to a systematic approach to ensure both reliability and validity of the findings. A pre-test was initially carried out at Janfusun Fancyworld in Yunlin County over two weekends, from August 1 to August 14, 2020. During this phase, 80 face-to-face interviews were conducted, resulting in valid pre-test questionnaires. The pre-test aimed to test the reliability and validity of the questionnaire, estimate the time required for data collection, identify challenges, and refine the questionnaire content. The data collected was subjected to factor analysis, where items with communalities below 0.60 and factor loadings under 0.40 were eliminated. As a result, 8 items were removed, and the screen test confirmed the retention of five common factors. In the end, 18 items were finalized, explaining 68.8% of the variance, thereby completing the formal scale construction. For the formal data collection phase, experienced survey personnel from the Poll Centre at Chienkuo Technology University were engaged. A total of eight interviewers, working in pairs, conducted fieldwork at ten selected amusement parks in Taiwan. The parks were chosen using stratified random

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sampling, taking into account regional distribution and population density, with four parks located in the northern region, three in the central region, and three in the southern region. Before conducting the formal interviews, the interviewers carried out site surveys to assess visitor density and traffic patterns, allowing them to choose optimal interview locations within the parks. During data collection, interviewers engaged with visitors at predetermined entry and exit points, using visual aids to clarify the questions. This phase took place over four weekends from September 2 to September 24, 2020, during which 310 face-to-face interviews were completed. After removing 10 invalid responses, 300 valid samples were obtained, achieving a response rate of 96.77%. The demographic profile of the participants is detailed in Table 2.

Table 2. Profile of participants.

Demographic variables	Items	Frequency	Percentage
Gender	Female	150	50.0%
	Male	150	50.0%
Age	Under 20 years old	75	25.0%
	21–30 years old	114	38.0%
	31–40 years old	45	15.0%
	41–50 years old	32	10.7%
	51–60 years old	28	9.3%
	61 years old and above	6	2.0%
Occupation	Civil servant	8	2.7%
	Military/Police personnel	5	1.6%
	Business	19	6.4%
	Service industry	51	17.0%
	Retired	5	1.6%
	Homemaker	11	3.7%
	Laborer	35	11.7%
	Teacher/Educator	6	2.7%
	Freelancer	14	4.6%
	Student	122	40.7%
	Unemployed	10	3.3%
	Other	14	4.7%
Education level	High school or below	74	24.7%
	Vocational school	29	9.6%
	University	173	57.7%
	Graduate school or above	24	8.0%
Income/Month	Below $700 USD	150	50.0%
	$700–$1,400 USD	94	31.3%
	$1,400–$2,100 USD	34	11.4%
	Above $2,100 USD	22	7.3%

4.2. Reliability Analysis

In this study, Cronbach's α was used to assess the scale's reliability, with a threshold of 0.7 serving as the standard: α values above 0.8 indicate good reliability, values between 0.7 and 0.79 are acceptable, values from 0.6 to 0.69 are considered questionable, those between 0.5 and 0.59 require revision, and α values below 0.5 are unacceptable (DeVellis, 1991; Nunnally, 1978). The overall Cronbach's α for this scale was 0.894, signifying good reliability. Table 3 shows the correlation between individual item scores and the overall scale score, along with the changes in Cronbach's α if any items were deleted. Statistical guidelines classify correlations as follows: $r = 0$ indicates no correlation, $0 < r < 0.3$ suggests low correlation, $0.3 < r < 0.7$ represents moderate correlation, $0.7 < r < 1$ indicates a high correlation, and $r = 1$ denotes a perfect correlation. In this analysis, the lowest correlation was observed for Item 5, with a coefficient of $r = 0.628$, while Item 4 showed moderate correlation ($0.3 < r < 0.7$), and the rest displayed high correlations. Importantly, removing any item would not improve Cronbach's α, indicating

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no benefit from item deletion. Therefore, all items were retained, and the scale demonstrated good internal consistency based on this analysis.

Table 3. Individual item scores and the overall item scores.

Item	Correlation with total score	Change in Cronbach's α after item deletion
The architecture of the amusement park exhibits highly attractive characteristics.	0.754	0.865
The interior decoration of the amusement park features an appealing and cohesive style.	0.747	0.833
The amusement park's overall style is well-aligned with its central theme.	0.763	0.867
The air quality within the amusement park is notably pleasant.	0.698	0.806
The noise levels throughout the amusement park are well-managed and appropriate.	0.628	0.819
The use of colors within the amusement park effectively enhances its overall appeal.	0.717	0.790
The background music in the amusement park contributes to a more enjoyable atmosphere.	0.701	0.810
The spacing between seats in the leisure areas of the amusement park allows for convenient access.	0.765	0.876
The meticulously designed amusement equipment significantly enhances the enjoyment of the experience.	0.733	0.877
The queue management system for the amusement rides is organized and efficient.	0.750	0.869
The ticket booths in the amusement park are strategically positioned for convenient ticket purchases.	0.741	0.867
The intersections near the ticket booths in the amusement park facilitate smooth and efficient navigation.	0.748	0.863
The walkways between amusement facilities in the park are sufficiently wide, allowing for easy passage.	0.796	0.767
The signage throughout the amusement park offers clear guidance, making it easy for visitors to find their destinations.	0.757	0.806
The entrances and exits of the amusement areas in the park are straightforward to navigate.	0.761	0.795
The staff at the amusement park consistently present themselves in a neat and tidy manner.	0.764	0.866
The restrooms in the amusement park are well-maintained and clean.	0.726	0.836
The surrounding environment of the amusement park is kept in excellent condition, reflecting a high standard of cleanliness.	0.765	0.844

4.3. Validity Testing

To test the discriminative power of each item, a t-test was employed, comparing the top and bottom 27% of samples, following the method suggested by Kaplan and Saccuzzo (2001). A significant difference between these groups suggests that the item has strong discriminative power. A critical ratio (CR) value greater than 1.96 is considered statistically significant, meeting the test standard (see Table 4). Initially, standard deviations were examined, and Item 5 showed the highest deviation at 0.905, indicating greater score variability for this item. However, the overall means and standard deviations did not show significant disparities. Both item-total correlations and critical ratios were statistically significant, confirming that all items possess strong discriminative power and effectively differentiate between participant responses. According to Mardia's guidelines, observed variables must meet specific skewness and kurtosis values (within -2 to +2) to satisfy the normal distribution requirement (Wulandari, Sutrisno, & Nirwana, 2021). In this study, descriptive statistical analysis was applied to

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evaluate the skewness and kurtosis of all items, and the results confirmed that these values fall within the acceptable range, ensuring that the data follows a normal distribution pattern.

Table 4. Item analysis.

Item	Mean	Standard deviation	Item-total correlation critical	Ratio
01	6.13	0.823	0.754**	16.502
02	6.14	0.798	0.747**	15.915
03	6.33	0.700	0.763**	14.948
04	6.17	0.895	0.698**	15.949
05	5.81	0.903	0.628**	13.952
06	6.30	0.711	0.717**	13.195
07	6.41	0.691	0.701**	14.033
08	6.12	0.847	0.765**	17.809
09	6.19	0.723	0.733**	15.679
10	6.05	0.810	0.750**	15.463
11	6.12	0.832	0.741**	14.295
12	6.04	0.890	0.748**	15.058
13	6.30	0.761	0.796**	19.252
14	6.28	0.721	0.757**	16.064
15	6.24	0.742	0.761**	16.559
16	6.43	0.666	0.764**	20.624
17	6.29	0.931	0.726**	16.908
18	6.36	0.790	0.765**	17.205

Note: **p<0.01.

4.4. Exploratory Factor Analysis

This study's exploratory factor analysis (EFA) successfully identified and confirmed the scale's underlying dimensions. The analysis produced a Kaiser-Meyer-Olkin (KMO) value of 0.819, and Bartlett's test of sphericity was highly significant (p = 0.000), indicating that the dataset was well-suited for factor analysis (Kaiser, 1974). Principal component analysis was then applied to extract common factors, following the criteria of retaining factors with eigenvalues greater than 1 and eliminating items with factor loadings below 0.4.

Table 5. Factor analysis.

Item	Item 1	Item 2	Item 3	Item 4	Item 5
17	0.860				
18	0.854				
16	0.784				
10		0.827			
09		0.750			
11		0.726			
12		0.485			
06			0.664		
05			0.650		
07			0.632		
04			0.615		
08			0.606		
01				0.804	
02				0.773	
03				0.662	
14					0.788
13					0.766
15					0.655
Eigenvalue	2.409	2.336	2.234	2.074	2.002
Variance explained by each factor	26.71%	12.69%	9.15%	6.64%	6.40%
Cumulative variance explained	61.5%				

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Table 5 illustrates how the EFA extracted five distinct factors: aesthetics, ambient conditions, space function, way finding, cleanliness, and Main Thoroughfare. These five factors collectively explained 61.58% of the total cumulative variance. The results indicate that these dimensions— aesthetics, ambient conditions, space function, way finding, cleanliness, and Main Thoroughfare—are the most significant contributors to how visitors perceive the quality of the service environment in amusement parks.

4.5. Construct Reliability Analysis

As presented in Table 6, the standardized factor loadings for all items exceeded the recommended threshold of 0.5, ranging from 0.522 to 0.641, indicating that the items appropriately represent their respective latent constructs. The t-values corresponding to each factor loading were statistically significant ($p < 0.05$), further validating the reliability of the items in measuring their underlying constructs. The Squared Multiple Correlations (SMC) values, which represent the proportion of variance in each item explained by its latent construct, ranged between 0.478 and 0.768, demonstrating acceptable levels of explained variance. Furthermore, the Cronbach's α values for each factor exceeded the acceptable threshold of 0.7, ranging from 0.847 to 0.898. This indicates strong internal consistency and reliability across all factors. The cumulative findings from factor loadings, SMC values, and Cronbach's α provide compelling evidence of the scale's convergent validity, demonstrating that the observed items effectively represent the theoretical constructs they aim to measure. Overall, the analysis confirms the robustness of the measurement model, which successfully captures the essential dimensions of servicescape quality in amusement parks.

Table 6. Construct reliability.

Factor	Item	Standardized factor loading	t-value	SMC	Cronbach's α
Cleanliness	(Eigenvalue=2.002, Variance =11.123%, Alpha =0.894)				
	17	0.350	16.908	0.728	0.894
	18	0.322	17.205	0.751	
	16	0.422	20.624	0.735	
Space/ Functionality	(Eigenvalue=2.234, Variance =12.410%, Alpha =0.894)				
	10	0.641	15.463	0.639	0.894
	09	0.605	15.679	0.596	
	11	0.567	14.295	0.623	
	12	0.539	15.058	0.656	
Ambient conditions	(Eigenvalue=2.366, Variance =13.143%, Alpha =0.847)				
	06	0.351	13.195	0.684	0.847
	05	0.628	13.952	0.478	
	07	0.513	14.033	0.616	
	04	0.519	15.949	0.562	
	08	0.473	17.809	0.628	
Aesthetics	(Eigenvalue=2.409, Variance =13.385%, Alpha =0.898)				
	01	0.460	16.502	0.732	0.898
	02	0.534	15.915	0.768	
	03	0.488	14.948	0.753	
Wayfinding	(Eigenvalue=2.074, Variance =11.520%, Alpha =0.850)				
	14	0.589	16.064	0.622	0.850
	13	0.551	19.252	0.705	
	15	0.587	16.559	0.636	

4.6. Path Diagram and Interpretation of Fit Indices

The path diagram presented in Figure 1 visually represents the hypothesized relationships between the latent constructs and their corresponding observed variables. The latent variables measured in the model include key dimensions of the servicescape: aesthetics, ambient conditions, space function, way finding, and cleanliness. The

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servicescape quality model depicts these constructs in relation to their respective observed indicators, highlighting the connections and dependencies within the model's structure.

Table 7 provides a detailed analysis of the regression weights, used to estimate the strength of connections between each observed variable and its corresponding latent construct. The regression weights, referred to as standardized coefficients, are all statistically significant at $p < 0.001$, with critical ratios well above the conventional benchmark of 1.96, indicating strong relationships across the model. The minimal standard errors provide more evidence of how precise these estimates are, further attesting to the accuracy of the model's measurements. Most of the pathways exhibit a high degree of statistical significance, which strengthens the relationships within the model, thereby enhancing the reliability of the constructs and the validity of the entire measurement framework. The consistency of the model validates its efficacy in accurately reflecting the essential aspects of servicescape quality in Taiwanese amusement parks. The results give a solid framework for understanding how each dimension affects how good people think the servicescape is, which makes it possible to put the framework into practice.

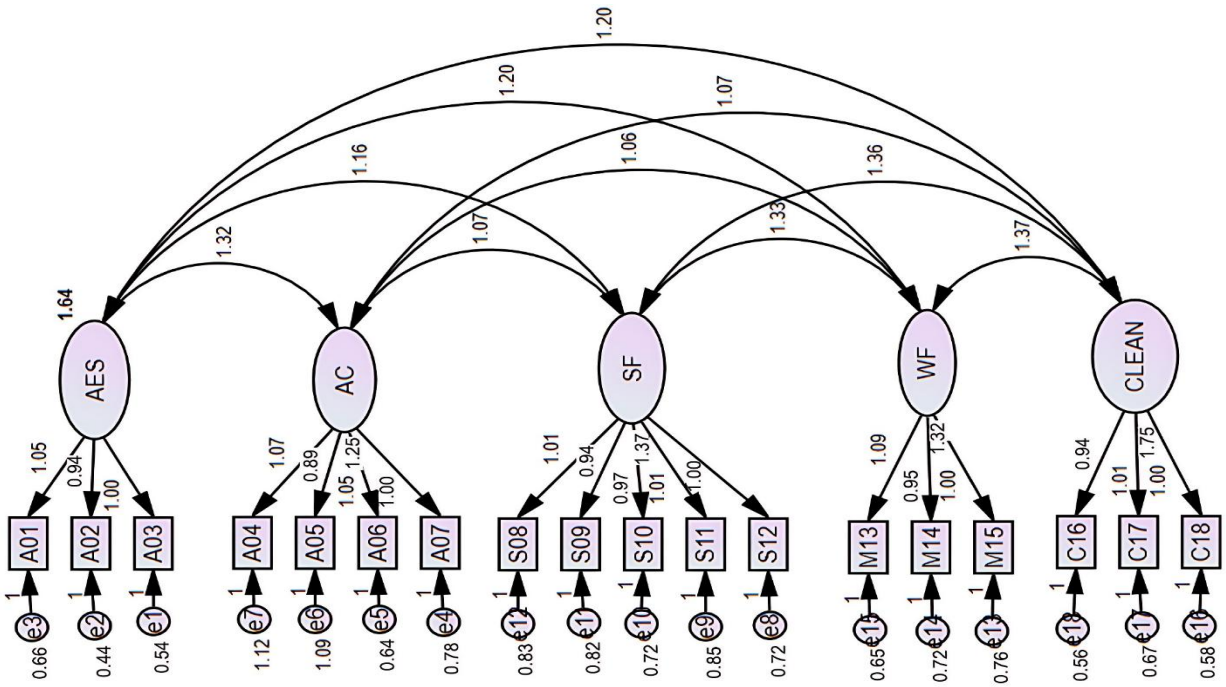


Figure 1. Path diagram of the measurement model.

Note: AES=Aesthetics, AC=Ambient conditions, SF=Space function, WF=Wayfinding, CLEAN=Cleanliness.

Table 7. Regression weights.

Relationships			Estimate	S.E.	C.R.	P
A03	<---	Aesthetics	1.000			
A02	<---	Aesthetics	0.939	0.046	20.222	***
A01	<---	Aesthetics	1.045	0.054	19.384	***
A07	<---	Ambient conditions	1.000			
A06	<---	Ambient conditions	1.051	0.068	15.500	***
A05	<---	Ambient conditions	0.892	0.072	12.467	***
A04	<---	Ambient conditions	1.070	0.078	13.737	***
S12	<---	Space function	1.000			
S11	<---	Space function	1.015	0.065	15.676	***
S10	<---	Space function	0.966	0.061	15.954	***
S09	<---	Space function	0.942	0.062	15.200	***
S08	<---	Space function	1.011	0.064	15.751	***
M15	<---	Wayfinding	1.000			

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Relationships			Estimate	S.E.	C.R.	P
M14	<---	Wayfinding	0.946	0.061	15.431	***
M13	<---	Wayfinding	1.088	0.065	16.824	***
C18	<---	Cleanliness	1.000			
C17	<---	Cleanliness	1.011	0.053	19.001	***
C16	<---	Cleanliness	0.937	0.049	19.147	***

Note: ***p<0.001.

4.7. Convergent Validity Analysis

The fit indices outlined in Table 8 provide a quantitative evaluation of how well the proposed model corresponds to the empirical data. The Chi-Square statistic (χ^2 = 292.195) tests the null hypothesis that the model perfectly fits the data. Although a lower chi-square value suggests a better fit, this statistic is highly sensitive to sample size. Therefore, it is important to interpret the significant chi-square result cautiously, especially when dealing with larger samples, as it indicates a deviation from perfect fit. The Chi-Square to Degrees of Freedom Ratio (χ^2/df = 2.338) offers a more robust metric of model fit, particularly in cases where the chi-square is significant due to large sample sizes. A ratio below 3 is generally considered indicative of a satisfactory fit, and the value of 2.338 in this case suggests the model appropriately represents the underlying data structure. The root mean square residual, RMR = 0.042, is an indicator of the amount of discrepancy between observed and predicted correlations in the model. The RMR value of 0 would mean a perfect fit. The small value indicates that the differences are small and acceptable, thereby supporting the model's reliability. The Standardized Root Mean Square Residual (SRMR = 0.0328) modifies the RMR by taking into account the standard deviations of both observed and predicted correlations. An SRMR below 0.08 indicates a good fit; hence, the obtained value of 0.0328 shows a strong fit between the model and the data. The Goodness of Fit Index, GFI = 0.895, indicates how much of the difference in the observed data the model explains. A GFI that is closer to 0.9 shows that the fit is good; hence, the model explains a lot of the observed difference. The Adjusted Goodness of Fit Index, AGFI = 0.857, adjusts the GFI by taking into account how complex the model is. AGFIs above 0.8 are considered good and indicate that the model has a good fit, even when it is complex. The Comparative Fit Index, CFI = 0.961, considers how well the proposed model fits in comparison with a basic model; values above 0.95 indicate a decent fit. In this case, a CFI of 0.961 indicates that the proposed model fits the data substantially better than the null model. Finally, the Root Mean Square Error of Approximation, RMSEA = 0.067, is a measure of how well the model, with the best estimated numbers, fits the overall pattern of relationships in the population. While a value smaller than 0.08 is considered acceptable, a RMSEA of 0.067 shows a good fit, which supports the model as generally being good enough (Byrne, 2016; Jöreskog & Sörbom, 1993).

Table 8. Results of confirmatory factor analysis.

Index	$\chi 2$	$\chi 2$/df	RMR	SRMR	GFI	AGFI	CFI	RMSEA
Index value	292.195	2.338	0.042	0.0328	0.895	0.857	0.961	0.067

One research study by Lockwood and Pyun (2020) explores the atmosphere in high-end hotels, while another by Xu and Gursoy (2021) investigates the atmosphere in short-term rentals. All these studies emphasize how specific environmental characteristics impinge on the experiences of customers. However, this research focuses on amusement parks, where such aspects as appearance, space use, and cleanliness matter differently because of the unique nature of amusement park operations. Lockwood and Pyun (2020) identified five significant components of hotel environments: aesthetic quality, functionality, atmosphere, spaciousness, and physiological conditions. Their study pointed out that the aesthetic quality component has the most significant influence on guest satisfaction. Similarly, this study, which focused on Taiwanese amusement parks, also highlighted the crucial role of aesthetics. However, the study places a greater emphasis on cleanliness and the functionality of the space, as these factors are

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crucial for ensuring safety and ease of movement in parks with large visitor numbers. Unlike a hotel where the guests want personal luxury, people who visit amusement parks give more weight to comfort and how well the operations run. The STHRSCAPE model of Xu and Gursoy (2021) brought forth two major categories: physical servicescapes and social servicescapes. The social servicescapes strongly emphasize the interaction between hosts and visitors, as well as safety. The Taiwanese amusement park scale primarily focuses on the physical aspects of the park, as there is minimal social interaction between the staff and the guests. Both studies did illustrate, however, how crucial environmental factors are to the satisfaction of the visitors: cleanliness and layout. Xu and Gursoy reported that the conditions around the customers change their perceptions. This study also reports that the "Surrounding Environment" is important in creating the overall experience. Both early studies are in agreement that the physical surroundings influence greatly how customers behave and think, as manifested with strong factor loadings in the study of a Taiwanese amusement park. The statistical results reported in various studies are comparable, as the servicescape dimensions consistently hold high Cronbach's alpha values, indicating the reliability of these dimensions across all studies. Each study also presents certain characteristics of what it focuses on: beautiful designs for luxury hotels, social interactions for the short-term rental, and space utilization and cleanliness for the amusement parks. These differences manifest the importance of changing service area measurement tools to fit special working conditions and visitor needs in each industry.

Following the stringent academic criteria of Lockwood and Pyun (2020) and Xu and Gursoy (2021) this research validates its servicescape dimensions by using a mixed-method approach to ensure the study has valid and useful scales of servicescape dimensions for Taiwanese amusement parks. It thus adds to the nascent corpus of research into the quality of servicescape and its influence on customer satisfaction. It provides pivotal information for the managers of these amusement parks to better the experiences of visitors.

5. CONCLUSION

The presented path diagram and fit indices, in conjunction with PLS-SEM analysis, demonstrate a strong fit between the measurement model and the data. All loadings are higher than 0.5, thus ensuring that all links between latent constructs and their respective indicators are appropriate. The model's accuracy is validated by the fit indices, particularly the Comparative Fit Index and the Standardized Root Mean Square Residual. This suggests that the proposed structure effectively explains the empirical observations.

5.1. Implications

These findings also carry considerable practical importance for the managers of amusement parks in Taiwan, in that this established Servicescape Quality Scale is an overall instrument that they can draw upon and use in sizing up and working out these key dimensions of a service environment: aesthetics, ambient conditions, space function, way finding, and cleanliness—critical for the determination of visitor satisfaction and subsequent actions pertaining to the park, including returning or making recommendations. These observations could assist managers in refining their services, emphasizing the importance of cleanliness and beautification, and enhancing the park's appeal to visitors. Moreover, investing in impressive-looking design, maintaining well-kept facilities, and integrating the landscape with nature could significantly enhance the guest's experience during their stay. Optimized spatial layout and functionality will further enhance visitor flows, reduce congestion, and raise comfort on the whole. The scale functions both as a diagnostic tool to pinpoint areas in need of improvement and as a benchmarking mechanism to assess performance against both temporal and competitive developments. The insights obtained thereby guide the strategic decisions concerning marketing efforts and the improvement of facilities and services.

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5.2. Limitations

Notwithstanding such strong results, there are a couple of limitations. Although lengthy, the scale has been meticulously developed for the amusement parks of Taiwan and may therefore need some modification before it can be applied with confidence in other cultural and geographic contexts. Further, reliance on cross-sectional data limits the tracking of visitor perceptions over time. The focus on amusement parks also possibly misses a broader range of experiences happening in other leisure settings and thus necessitates more confirmation in a wide variety of contexts.

5.3. Future Research Suggestions

Thus, future studies should focus on the refinement and testing of the Servicescape Quality Scale across different cultural and geographical contexts to secure greater generalizability. Longitudinal studies may offer more complete insight into how servicescape quality influences the long-term satisfaction and loyalty of visitors. Servicescape research can thus be extended to other leisure outlets such as theme parks and zoos to integrate knowledge across those contexts on how servicescape affects customer experiences. The respondents' qualitative comments could enhance the scale by highlighting sensitive aspects of servicescape that this purely quantitative study might not uncover.

In sum, the refined Servicescape Quality Scale has the outstanding potential to boost visitor satisfaction, ensure customer retention, and continue brand loyalty for Taiwanese amusement parks. The tool will enable managers to sustain their success and enhance their competitiveness in a highly competitive market environment.

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