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# Study on Visitor Experience Value Assessment Based on Multi-Dimensional Factor Analysis - Case Study of Forbidden City Museum in Beijing, World Cultural Heritage Site

<sup>1</sup> Zhang Yu, <sup>2</sup> Cui Hongxiao, <sup>3</sup> Zhang Qingfeng

*1 Ph.D. Candidate, Department of Global Convergence, Kangwon National University., Korea  
buzhangxs@gmail.com*

*1 Ph.D. Candidate, Department of Global Convergence, Kangwon National University., Korea  
hongxiao9517@gmail.com*

*2 Professor., Department of Global Convergence, Kangwon National University., Korea  
3721@kangwon.ac.kr*

## Abstract

*The Beijing Palace Museum is a cultural heritage site. It is facing challenges and opportunities in the context of the experience economy. This study explores the multidimensional factors of visitor experience value and assesses visitors' overall satisfaction with the Beijing Palace Museum through quantitative and qualitative methods. The study focuses on five factors: personalized experience, interactive and cooperative experience, service facility experience, cultural and spiritual experience, and intelligent and innovative experience. The results show that although most visitors are satisfied with the overall experience of the Forbidden City, there is a gap between expectations and actual satisfaction on specific experience factors, such as content updates on the official website, staff services, and customer feedback. Based on this, the study proposes strategic recommendations to optimize the visitor experience to promote the management and innovative development of large cultural museums.*

**Keywords:** *Beijing Palace Museum, Experience Value, Customer Satisfaction, Multi-Dimensional Factor Analysis*

## 1. INTRODUCTION

The experience economy concept has become central to business-consumer interactions in today's rapidly evolving economic environment. B. Joseph Pine II and James H. Gilmore introduced the experience economy theory in 1998. This theory emphasizes that in modern business activities, customers seek the product or service and its unique experience. [1] Within the framework of the experience economy, experiences have become an independent commodity, valued for their ability to engage consumers' senses, emotions, intellect,

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Corresponding Author: [3721@kangwon.ac.kr](mailto:3721@kangwon.ac.kr)

Tel: +82-33-250-7972, Fax: +82-33-250-7972

Professor, Dept. of Global Convergence, Kangwon National Univ., Korea

and social aspects, providing personalized and memorable interaction. [2]

As a key social institution of culture and education, museums are no longer venues for collecting and displaying historical artifacts; their social functions are fundamentally changing. In the broader context of the experience economy, museums are seen as platforms providing educational, entertaining, and aesthetic experiences. Their value lies in the artifacts displayed and how they tell stories through exhibitions, stimulating visitors' senses, emotions, and thoughts, enhancing public engagement and satisfaction. These transformations reflect the evolution of museums from custodians of cultural relics to creators of cultural experiences and promoters of education.[3]

As consumer demand for cultural consumption increases, the experience economy presents new development opportunities and challenges for museums. Under this economic model, museums must preserve and pass on cultural heritage and meet the public's diverse demands for cultural experiences through innovative exhibition designs and educational programs.[4] For instance, by employing new media technologies such as Virtual Reality (VR) and Augmented Reality (AR), museums can offer visitors a more immersive and interactive learning experience, enhancing exhibitions' appeal and educational impact.

Additionally, museums can expand their interaction with the public and enhance their social influence through social media and mobile apps. Using these platforms, the museums can promote upcoming exhibitions and events and collect visitor feedback, further optimizing experience design and service quality.[5]

## **2. Museum Visitor Experience Value System**

This study, centered on the customer and from the experience economy perspective, constructs an evaluation system for the value of customer experience in museums. This evaluation system aims to reveal which experiential factors are most important to customers in the contemporary museum environment and how these factors affect the overall customer experience.

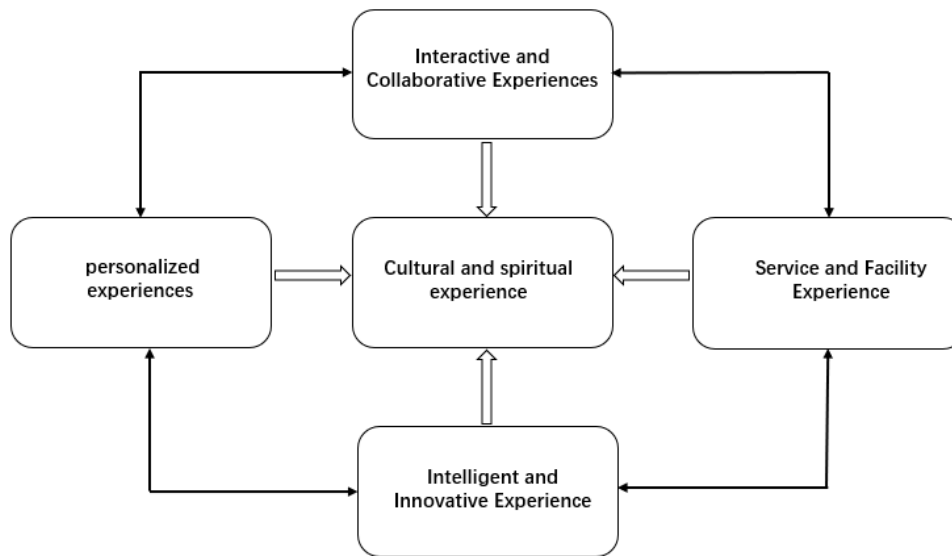
### **2.1 Characteristics of Museum Customer Experience**

The concept of "experience" is the process of gaining a deep understanding of things through practical operation, an experience where individuals actively participate and acquire knowledge.[6] Based on this definition, experience is seen as a way to know and understand society through direct experiences, during which individuals gain extensive knowledge and feel satisfied. When applied to museum visits, the experience is not just a visit; it also imparts deeper meanings impacting the visit. [7] From the experience perspective, museum visits differ from traditional sightseeing; they require visitors to engage fully and interact physically, emotionally, intellectually, and spiritually. The museum experience emphasizes individual feelings, discovery, and engagement.[8] Therefore, the purpose of visiting museums extends beyond learning, leisure, or entertainment; it is also about seeking high-quality intrinsic spiritual experiences and emotional support, fulfilling the needs for self-improvement and spiritual growth.[9]

### **2.2 Museum Customer Experience Value System**

The customer experience affects individual perceptions and satisfaction. It can rapidly spread through online and other marketing channels, influencing purchasing decisions and service performance.[10] Although considerable research has been done on customer experience, its definition and scope remain contested in

academia. Customer experience can be analyzed from functional, social, and emotional experience dimensions. [11] For museums, personalized, interactive and collaborative, service and facility, cultural and spiritual, and intelligent and innovative experiences are key components of customer value perception. These five elements influence each other and construct the museum customer experience value system. [12] (Figure 1)



**Figure 1. Museum Customer Experience Evaluation System Interactive and Collaborative Experiences**

**Personalized Experiences:** Customer experience is profoundly influenced by individual living environments and varies with different contexts. In a museum, customer experience is a comparative process where visitors compare their perceptions of exhibits to their knowledge and experiences, gaining comprehensive insight.[13] Customers are at the core of the experience, and their unique personal backgrounds influence their observations, hearings, and feelings. This produces distinctive psychological reactions when encountering new things, creating differentiated experiential outcomes. Thus, personalization is crucial for enhancing customer experience in museum settings.[14]

**Interactive and Collaborative Experiences:** In the era of the experience economy, consumers seek participatory and psychological experiences, making interaction and collaboration crucial to the museum customer experience. By offering diverse interactive exhibits and participatory activities, museums meet customers' desires for novel experiences, deepen educational experiences, and provide personalized services. [15] Museums implement various interactive programs to enhance interactions between customers, staff, and other service platforms. They engage in rich collaborations and exchanges with different sectors and groups. This strengthens social experiences and improves customer satisfaction and loyalty. It helps museums enhance their social transmission through word of mouth. As a result, museums maintain their competitiveness in a fierce market and leave lasting impressions on customers.[16]

**Service and Facility Experience:** Customer experience encompasses the comprehensive feelings formed by interacting with a business or brand. This experience includes all perceptions and reactions from the first point of contact with the brand to various interaction stages.[17] Customer experience is a comprehensive assessment, and museums should pay attention to the quality of service at all points (including staff and museum facilities),

focus on service details, and enhance the customer experience.[18]

**Cultural and Spiritual Experience:** Spiritual experiences represent the highest customer experience among all museum experiences. Museum visits involve deeper levels of spiritual fulfillment, including acquiring knowledge, cultural insights, spiritual enlightenment, and positive emotional impact.[19] Therefore, when designing themed activities and exhibitions, enhancing participants' spiritual experiences can greatly elevate the value and significance of the museum.

**Intelligent and Innovative Experience:** Intelligent and innovative experiences significantly enhance customer experience outcomes and satisfaction. [20] They enhance the uniqueness and participatory (interactive) nature of experiences, providing visitors with new visual, auditory, and multisensory experiences in modern museums. Museums use advanced technologies such as VR, AR, and artificial intelligence, enriching interaction possibilities among museums and customers.[21] Additionally, modern digital media and mobile devices facilitate services at all stages of the museum experience. These tools make a smooth and comprehensive customer experience, significantly enhancing the overall customer experience.[23]

The customer experience at museums affects individual perception and satisfaction. It influences others' consumption decisions through online networks. Museum customer experience includes personalized, interactive and collaborative, service and facility, cultural and spiritual, and intelligent and innovative experiences. These factors enhance customer satisfaction, strengthen social dissemination, and ensure museums are competitive. [24]

### **3 Analysis of Customer Experience Value at the Beijing Palace Museum**

The Beijing Palace Museum is widely known as the Forbidden City. It was the imperial palace of the Ming and Qing dynasties, situated in the heart of China's capital, Beijing.[25] It is one of the largest palace complexes in the world. It was designated a UNESCO World Heritage Site in 1987, a jewel among global cultural heritage. [26] This site is a historic imperial palace and a key venue showcasing the essence of Chinese art and culture. The collections of the Forbidden City include, but are not limited to, various forms of ancient Chinese art such as paintings, calligraphy, ceramics, and jade. These treasures span over six hundred years of history, making the Forbidden City one of the largest museums in the world. [27]

In modern times, the Forbidden City evolved into a comprehensive cultural institution—the Beijing Palace Museum. Since its opening to the public in 1925, it has annually attracted thousands of visitors and scholars. [28] It is open to the public and regularly hosts exhibitions and cultural events that promote and preserve Chinese traditional culture. As a symbol of Chinese culture, the Forbidden City displays the history and culture of China's feudal era and embodies the unique charm of ancient Chinese architecture and art. Therefore, the Forbidden City has become an indispensable resource and venue for studying Chinese history and culture.[29]

This study aims to systematically assess the importance of value elements experienced by visitors during their interaction with the Palace Museum and to provide a comprehensive evaluation of their overall satisfaction. This study collected and analyzed visitors' knowledge and perceptions using quantitative and qualitative research methods, exploring their needs and expectations for cultural experiences. The findings enhanced the understanding of visitor needs and provided targeted strategic recommendations for the Palace Museum. These strategies aim to optimize visitor experiences and promote the modern inheritance and innovative development of Chinese traditional culture. Additionally, the methodology and findings of this study offer a reference framework for cultural heritage institutions to meet and exceed visitor expectations, enhancing their satisfaction and engagement.

## 4. Research Methodology

### 4.1 Design of Customer Experience Survey Questions

This study utilizes an online questionnaire to systematically collect data on visitors' experiences, satisfaction, and other relevant information at the Palace Museum. The questionnaire is divided into three parts. The first part focuses on the demographic characteristics of the participants, including a series of questions about their basic information to confirm their visit to the Palace Museum. The second part includes 26 questions based on five major experiential factors. These questions evaluate visitors' experiences in terms of importance and satisfaction. The third part inquires about the visitors' overall satisfaction and willingness to visit again.

The questionnaire uses a Likert five-point scale rating system, allowing visitors to express their opinions and feelings. [30] Five hundred questionnaires were distributed in this study, of which 468 were returned. After screening, 433 valid questionnaires were obtained, resulting in an effective response rate of 92%. The high response rate and scientific data collection design ensure the reliability and representativeness of the study's results.

This research constructs a questionnaire framework that aligns with the museum customer experience evaluation system. Based on the Beijing Palace Museum's circumstances, a customer experience value survey questionnaire was systematically designed (Table 1). The questionnaire is designed to comprehensively capture visitors' experiences and assessments, thereby gaining a deep understanding of the subtle differences in customer experiences and the underlying motivations. Furthermore, the questionnaire items undergo rigorous coding, ensuring systematic data management and facilitating the efficiency and accuracy of subsequent data analysis.

**Table 1: Survey Questions on Visitor Experience Value at the Beijing Palace Museum**

Classification of Experience Items		Customer Experience Survey Questions
B1 Personalized Experiences	and	C4 Museum features a unique architectural style and cultural environment.
		C5 Museum features diverse display content and varied exhibition methods.
		C6 Each exhibition hall has a clearly defined cultural theme.
		C7 Museum frequently updates its thematic activities.
		C8 Museum offers personalized services tailored to different customers.
		C9 Museum has a rich and innovatively designed range of souvenirs.
		C10 The museum offers a variety of programs that enhance customer interactive experiences.
		C11 There are many opportunities for interaction with staff at the museum.
		C12 The museum collaborates with universities and social organizations to conduct various activities.
B2 Interactive and Collaborative Experience Factor	and	C13 The museum organizes public calls for artwork submissions.

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B3 Service and Facility Experience	C14 The official website is regularly updated and rich in content. C15 The museum is easily accessible, and parking is convenient. C16 The staff is enthusiastic, courteous, and provides attentive service. C17 Signage and visitor routes within the museum are clearly designed. C18 Interpreter services are provided with vivid and clear explanations. C19 Facilities are well-maintained (bathrooms, restaurants, shops, etc.). C20 The visitor service center is friendly and thorough in its service. C21 The museum values customer feedback. C22 The museum offers membership services.
B4 Cultural and Spiritual Experience	C23 The museum has a unique role in ideological and cultural education. C24 Visiting the museum helps to increase knowledge and broaden horizons. C25 The visit can bring about positive emotions such as joy and pleasure. C26 The museum plays a significant role in enlightening one's outlook on life, values, and worldview.
B5 Intelligent and Innovative Experiences	C27 Provides comprehensive electronic guide services. C28 The display, explanation, and thematic exhibitions use advanced technologies such as VR and AR to provide a good interactive experience for customers. C29 Offers online viewing (virtual exhibitions). C30 Utilizes virtual technology for artifact restoration and reproduction

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## 4.2 Reliability Test

This study conducted an extensive reliability analysis of the collected data using SPSS 20.0. As shown in Table 2, the overall Cronbach's Alpha coefficient obtained was 0.943. A high value indicates excellent internal consistency, validating scale's reliability. Further, each item in the questionnaire underwent an individual reliability analysis, assessed by calculating the "Cronbach's Alpha if the item was deleted" to evaluate the impact of each item. The analysis showed that the coefficients for these items were all lower than the overall Cronbach's Alpha, indicating that removing any item from the scale would decrease the reliability coefficient. Therefore, the configuration of each item in the questionnaire is necessary, and each item plays a significant role in assessing the overall customer experience.

These reliability analysis results support this study's data analysis and interpretation, ensuring the scientific accuracy of the findings and enhancing the research's credibility and practical value. The precise application of this methodology is crucial in ensuring that the research results can provide strong evidence and recommendations for academic discussions and practical applications in related fields.

**Table 2: Overall Reliability Statistics for the Survey Questionnaire**

Experience Factor	Indicator Elements	Cronbach's Alpha if the item is deleted	Cronbach's Alpha	
Personalized Experience Factor	C4	0.942	0.943	
	C5	0.941		
	C6	0.942		
	C7	0.940		
	C8	0.939		
	C9	0.939		
	Interactive and Collaborative Experience Factor	C10		0.939
		C11		0.937
		C12		0.939
C13		0.942		
Service and Facility Experience Factor		C14	0.941	
		C15	0.937	
	C16	0.940		
	C17	0.940		
	C18	0.941		
	C19	0.940		
	C20	0.941		
Cultural and Spiritual Experience Factor	C21	0.939		
	C22	0.942		
	C23	0.940		
	C24	0.942		
	C25	0.942		
	C26	0.942		
	C27	0.938		
Intelligent and Innovative Experience Factor	C28	0.937		
	C29	0.938		
	C30	0.936		

To ensure consistent and reliable evaluation, detailed reliability analyses were conducted on five key experiential factors—personalized experience, interactive and collaborative experience, cultural and spiritual experience, service and facility experience, and intelligent and innovative experience. The specific analysis process and results are detailed in Table 3. In the analysis, except for the personalized experience factor, where Cronbach's Alpha coefficient for the importance rating was slightly below 0.8. The reliability coefficients for the importance and satisfaction ratings of all other dimensions were stable at 0.8 or above. Notably, the reliability coefficients for three of the dimensions even exceeded 0.9.

These reliability analyses are consistent among the various sub-scales of the questionnaire. They show that, aside from a slightly insufficient evaluation of personalized experience, the questionnaire exhibits high reliability in assessing the importance and satisfaction of museum customer experience. This finding provides a solid methodological foundation for future research. It ensures that the results accurately reflect all dimensions of customer experience, thereby supporting effective management decisions and practical improvements.

The reliability indicators demonstrate that the questionnaire designed for this study effectively captures and accurately reflects visitors' experience assessments across multiple key dimensions. However, the reliability of the personalized experience factor is slightly lower. This indicates the need for further investigation and improvement in this area. Dimensions like interactive experience, perceived value, service quality, and environmental atmosphere have shown high reliability.

**Table 3: Reliability Statistics for Each Dimension of the Survey Questionnaire**

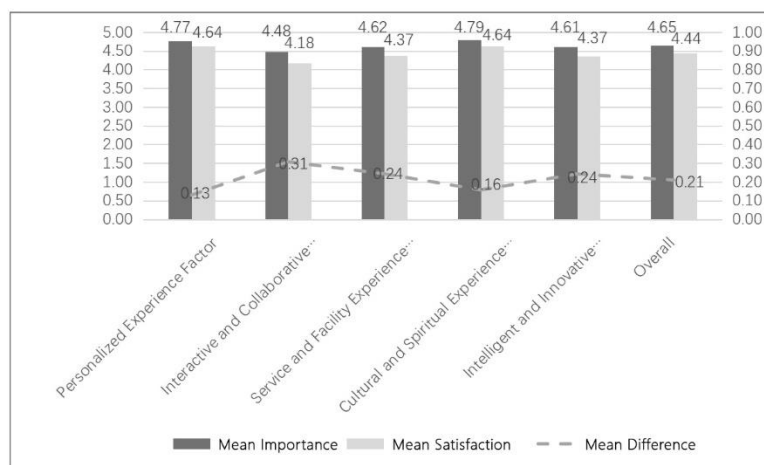
	Personalized Experience	Interactive and Collaborative Experience	Service and Facility Experience	Cultural and Spiritual Experience	Intelligent and Innovative Experience
Number of Items	6	4	9	4	4
Importance Reliability	0.717	0.806	0.865	0.806	0.925
Satisfaction Reliability	0.843	0.856	0.914	0.858	0.942

## 5. Indicator Analysis

### 5.1 Experience Factor Analysis

This study shows that 93.1% of customers are very satisfied or satisfied with the Beijing Palace Museum. Only 3.7% are moderately satisfied, and a combined 3.1% are dissatisfied or somewhat dissatisfied. This data reflects high customer satisfaction with the Beijing Palace Museum. The average satisfaction rating of 4.44 out of 5, further emphasizes its positive customer experience evaluation.

However, a detailed analysis of each experience factor reveals differences in satisfaction across various dimensions, with specific satisfaction mean scores ranging from 3.96 to 4.88. This variance indicates that despite high overall satisfaction, customers have varying expectations and levels of satisfaction with different experience factors, specifically illustrated in the satisfaction-importance chart (Figure 2).



**Figure 2. Statistical Analysis of Importance-Satisfaction Factors at the Beijing Palace Museum**



Figure 2 presents a deeper understanding of the relationship between the importance and satisfaction of various experience factors. The chart shows that for all experience factors, except the personalized experience factor (C7), the mean values exceed their corresponding satisfaction mean values. This result indicates that although the Palace Museum performs well in many respects, there is room for improvement in meeting customer expectations.

The difference between the importance and satisfaction of the personalized experience factors is the smallest, with a mean difference of only 0.13. This indicates that the museum's performance meets visitors' expectations. However, the interactive and collaborative experience factors' mean difference is 0.31. This suggests that the Palace Museum needs to implement more effective measures to improve visitors' interactive and collaborative experiences.

Additionally, the chart shows that the average satisfaction for all experience factors is above 4.18. This indicates that most visitors are satisfied with their overall experience. However, the differences between experience factors also highlight the importance of optimizing experiences, particularly in areas where importance ratings are high but satisfaction ratings are relatively low.

## 5.2 Differences Between Importance and Satisfaction of Experience Factors

**Table 4: Detailed Comparison of Importance and Satisfaction of Experience Factors at the Beijing Palace Museum**

Experience Factor	Indicator Elements	Importance (I)		Satisfaction (P)		I-P	Relevance	Two-Tailed Significance Probability(P)
		Mean	Standard Deviation	Mean	Standard Deviation			
Personalized Experience Factor	C <sub>4</sub>	4.96	0.204	4.88	0.338	0.08	0.552	0.005
	C <sub>5</sub>	4.75	0.532	4.63	0.770	0.13	0.398	0.054
	C <sub>6</sub>	4.79	0.415	4.63	0.576	0.17	0.387	0.062
	C <sub>7</sub>	4.67	0.637	4.67	0.637	0.00	0.786	0.000
	C <sub>8</sub>	4.75	0.532	4.54	0.721	0.21	0.595	0.002
Interactive and Collaborative Experience Factor	C <sub>9</sub>	4.67	0.565	4.46	0.721	0.21	0.605	0.002
	C <sub>10</sub>	4.38	1.056	4.08	1.248	0.29	0.734	0.000
	C <sub>11</sub>	4.38	0.970	4.04	0.999	0.33	0.746	0.000
Service and Facility Experience Factor	C <sub>12</sub>	4.54	0.588	4.29	0.859	0.25	0.620	0.001
	C <sub>13</sub>	4.63	0.647	4.29	0.859	0.33	0.597	0.002
	C <sub>14</sub>	4.67	0.565	4.42	0.776	0.25	0.530	0.008
	C <sub>15</sub>	4.38	0.875	4.13	1.076	0.25	0.871	0.000
	C <sub>16</sub>	4.67	0.565	4.25	0.847	0.42	0.545	0.006
	C <sub>17</sub>	4.71	0.550	4.50	0.780	0.21	0.861	0.000
	C <sub>18</sub>	4.83	0.482	4.67	0.565	0.17	0.746	0.000
	C <sub>19</sub>	4.75	0.532	4.42	0.717	0.33	0.513	0.010
	C <sub>20</sub>	4.79	0.415	4.63	0.647	0.17	0.182	0.394
	C <sub>21</sub>	4.71	0.624	4.38	0.970	0.33	0.476	0.019
Cultural and Spiritual	C <sub>22</sub>	4.04	1.197	3.96	1.197	0.08	0.972	0.000
	C <sub>23</sub>	4.83	0.482	4.71	0.624	0.13	0.844	0.000
	C <sub>24</sub>	4.92	0.408	4.75	0.608	0.17	0.613	0.001

Experience	C25	4.75	0.608	4.58	0.830	0.17	0.733	0.000
Factor	C26	4.67	0.702	4.50	0.885	0.17	0.840	0.000
Intelligent and	C27	4.63	0.824	4.46	0.884	0.17	0.843	0.000
Innovative	C28	4.63	0.647	4.29	0.955	0.33	0.607	0.002
Experience	C29	4.63	0.711	4.33	1.049	0.29	0.524	0.009
Factor	C30	4.54	0.779	4.38	0.924	0.17	0.733	0.000
Overall		4.65	-	4.44	-	0.21		

Table 4 compares customer importance and satisfaction at the Beijing Palace Museum and the T-test results for the related sample. Data analysis reveals that although several key areas are crucial in customer experience, the satisfaction variability is significant. This indicates a pressing need for further attention and improvement. Specifically, as shown in the table, significant differences exist among customer importance and satisfaction in items C11 (opportunities for interaction with museum staff), C13 (public calls for artworks by the museum), C16 (enthusiasm and courtesy of the staff, and attentive service), C19 (well-maintained facilities such as bathrooms, restaurants, and shops), C21 (the museum's attention to customer feedback), and C28 (exhibition displays, explanations, and the use of advanced technologies like VR and AR). The highest I-P index indicates the largest gap between customer expectations and actual experiences in these areas.

Effective communication is pivotal in the interactions between staff and visitors, significantly enhancing the overall visitor experience. [31] Based on the literature, interpreters and educators play a crucial role in disseminating educational content and key conservation information. This information is vital for deepening visitor engagement and enhancing satisfaction. [32] The attitude and quality of staff's service, particularly their enthusiasm and the breadth and depth of information, play a decisive role in shaping a positive visitor experience.

Studies have shown that positive staff interactions are directly related to enhanced learning experiences and visitor satisfaction. Staff's proactive engagement with visitors, such as promptly answering questions and sharing expert knowledge, enhances information acquisition and fosters a deeper understanding of museum content. This improvement in interaction meets visitors' cognitive needs and greatly enriches their cultural experiences. Therefore, optimizing communication between staff and visitors is a key strategy for enhancing museum service quality and visitor experience. [33]

Additionally, facilities such as the cleanliness and accessibility of sanitation and dining services significantly affect visitor comfort and overall satisfaction.[34] Therefore, creating a comfortable and friendly environment is a key museum strategy to maintain effective communication and attract repeat visits. The museums that incorporate visitors' feedback into service and exhibition improvement plans succeed in continuously enhancing service quality and visitor experience. Over time, this visitor-centered approach becomes particularly important for adapting to visitor needs and expectations.[35]

In terms of technological application, integrating cutting-edge technologies such as Virtual Reality (VR) and Augmented Reality (AR) can significantly enhance the interactivity and novelty of exhibitions, further increasing visitor engagement and satisfaction. These technologies enhance the exhibit's appeal and provide visitors with more profound and personalized learning opportunities.[36] Therefore, based on the data from Table 4, it is recommended that museums pay attention to these key differences. It can be achieved through staff training, improving infrastructure, and applying technology.

### **5.3 Classification of Customer Experience Assessment Indicators by Area at the Forbidden City**

This study categorized all 27 evaluation indicators into four areas by setting the mean importance at "4.665", and the satisfaction mean at "4.44". These four areas are strength, maintenance, improvement, and weakness. In this classification, the area of strength includes high importance and satisfaction indicators. The customers highly recognize these aspects, and these indicators are crucial to their experience. The maintenance area contains indicators with high satisfaction but lower importance, suggesting that although these aspects perform well, their impact on customer experience is less significant than others. The improvement area focuses on indicators with high importance but lower satisfaction, indicating that these areas currently underperform relative to customer expectations and require immediate attention and improvement. The weakness involves low importance and satisfaction indicators, highlighting the need for further improvement to enhance overall customer satisfaction. (Table 5).

**Table 5: Classification of 27 Evaluation Indicators into Four Areas**

Regional Division	Constant Criteria	Experience Indicators
Strengths Zone	Above average importance and satisfaction.	C4、C5、C6、C7、C8、C9、C17、C18、C19、C20、C23、C24、C25、C26
Maintenance Zone	Importance below average, satisfaction above average.	C27
Improvement Zone	Importance above average, satisfaction below average.	C14、C16、C21
Weakness Zone	Importance and satisfaction are below average.	C10、C11、C12、C13、C15、C22、C28、C29、C30

The area of strength includes 14 key elements with high importance and satisfaction ratings. Customers have affirmed the architectural style, cultural environment, themes, content, presentation of exhibitions, and the souvenir modules of the Forbidden City. This affirmation is reflected in the recognition of its aesthetic and cultural values and the high evaluation of its educational functions. Additionally, customers highly rate the facility services of the Forbidden City, particularly for its contributions to cultural education and its role in enlightening personal life philosophies and worldviews. The emotional value of the Forbidden City is conveyed through exhibitions and activities that impart deep cultural sentiments. It also receives high recognition from customers.

Since its establishment in 1420, the Beijing Palace Museum has experienced over 600 years of history and witnessed numerous significant historical transitions from feudal dynasties to modern society in China. Its unique museum strengths are its rich exhibits, clear thematic culture, and strong ideological and cultural dissemination capability. The Forbidden City hosts various permanent exhibitions and special thematic exhibitions. These special exhibitions include collaborations with museums from other countries for exhibit exchange like the recent "Forbidden City and the Palace of Versailles: Sino-French Exchange in the 17th and 18th Centuries" exhibition. For instance (C17), in terms of infrastructure, the Palace Museum has very clear guided paths. Signs throughout the area and a dedicated app allow visitors to view information on their mobile devices. (C18) The area is also staffed with highly professional interpreters. These measures further enhance the overall satisfaction and experience of visitors. The high ratings of these indicators reflect the Palace Museum's outstanding performance on both material and cultural levels. They also highlight its success in maintaining and passing on cultural heritage.

The maintenance area includes only one element: a well-developed electronic guide service. Although this service is not highly rated in terms of importance, its satisfaction score is close to the mean. This indicates that

it plays a positive role in the customer experience, and thus, the museum can maintain its current level of service in this area. The Beijing Palace Museum offers various electronic guide services, including rental handheld devices, mobile applications (APPs), and WeChat mini-programs. These tools provide multilingual options and rich content, including audio commentary, map navigation, and detailed exhibit explanations. These guiding services greatly enhance the visitor experience. Additionally, the Forbidden City incorporates multimedia interactive technologies, such as touch screens and virtual reality (VR), in specific exhibitions, further offering a rich and interactive visitor experience.

These electronic guide tools facilitate visitors' deep understanding of the Forbidden City's rich historical and cultural heritage. It significantly enhances the visit's convenience and modernity, exceeding customers' expectations. Although rated lower in importance in the overall evaluation, the electronic guide service undeniably increases visitor satisfaction and enriches the cultural dissemination of the Palace Museum. The high satisfaction with this experience factor suggests that while maintaining this service, the Forbidden City should continue exploring integrating new technologies to enhance the visitor experience further.

The improvement area focuses on highly important indicators with relatively low satisfaction. In this study, indicators such as C14 (the official website content is timely and rich), C16 (staff are enthusiastic and provide thoughtful service), and C21 (the museum values customer feedback) fall into this category. Analysis shows that visitors have high expectations for these aspects during their visit to the Forbidden City, especially the desire to obtain real-time and detailed information from the official website, receive enthusiastic and thorough service from staff, and expect the museum to handle and respond to their feedback effectively. However, the data indicates that the Beijing Palace Museum still falls short of meeting these expectations. Although the official website is fully functional, its update speed and content richness still do not fully satisfy visitors' needs. While the staff generally displays enthusiasm and courtesy, there is room for improvement in the detail and thoroughness of the service. The museum values customers' feedback but needs to strengthen its execution and feedback mechanisms.

Therefore, this research area suggests that the Beijing Palace Museum must make in-depth improvements to related services. Enhancing the official website's functional design and content update strategies is recommended to ensure the timeliness and relevance of information. Staff training to improve their service skills and customer care capabilities and establishing a more efficient and transparent customer feedback system help ensure that visitor feedback is effectively handled and responded to. This will enhance visitor satisfaction and meet their expectations. These improvement measures will have a significant impact on enhancing the overall visitor experience and satisfaction.

The weak area analysis focuses on indicators with low importance and satisfaction, totaling 11 items. These indicators primarily involve interactive and collaborative experiences and technological innovation experiences. Specifically, the indicators for interactive and collaborative experiences, including C10, C11, C12, and C13, aim to measure the effectiveness of the museum's interactive and socially engaging programs. C10 assesses the museum's diverse customer interaction experience programs, such as guided tours, interactive exhibitions, and participatory activities. C11 focuses on the opportunities for interaction between visitors and museum staff, evaluating their adequacy and quality. C12 examines the public activities conducted in collaboration with universities and other social units, while C13 concerns how the museum engages the public in collecting and participating in artworks. In assessing the interactive and collaborative experience indicators at the Forbidden City, generally low scores may reflect that visitors primarily visit historical and cultural museums for cultural learning and artifact viewing, which are typically seen as core elements of visitation motivation. Comparatively, interactive and collaborative experiences may play only a supplementary role in

visitors' expectations, hence the relatively low importance of such indicators.

Furthermore, these indicators also show lower satisfaction, which may be related to the Beijing Palace Museum's specific challenges. Due to the large number of visitors at the Palace Museum, the distribution of people in interactive experience areas is uneven, limiting experience opportunities for each visitor. High visitor traffic may also lead to difficulties in organizing and managing interactive activities, affecting visitor satisfaction. This situation highlights the complexity that museums must consider while designing and implementing interactive experience activities. It is recommended that the museum improve the quality and accessibility of interactive and collaborative experiences to improve these indicators' satisfaction and perceived importance. For example, we can optimize crowd management strategies and increase interactive experience points to ensure every visitor interacts well, even during peak times.

Regarding technological innovation experience, indicators C28, C29, and C30 assess how the museum utilizes new technologies to enhance the interactivity and educational impact of exhibitions. C28 focuses on using VR (Virtual Reality) and AR (Augmented Reality) technologies to enhance the interactive experience of artifact displays and explanations by the museum. C29 evaluates the museum's online viewing (virtual exhibitions) experience, examining the quality of content and user interface design. C30 involves using virtual technology for artifact restoration, assessing the effectiveness of these technologies, and their aid in helping audiences understand history.

This phenomenon indicates that Virtual Reality (VR), Augmented Reality (AR), and other technological innovations are potential tools to enhance museum experiences. However, their actual application may have low awareness and acceptance among visitors. Many visitors could be unfamiliar with these technologies. They may not fully understand their value in enhancing educational and interactive aspects, leading to lower importance scores. Moreover, low satisfaction ratings may reflect issues in the practical application of these technologies, such as interaction methods not being intuitive enough or the display effects not meeting expected standards. All of these factors could lead to a poor visitor experience. However, within the technological innovation indicators, C27 (providing comprehensive electronic guide services) received a higher importance rating. Visitors prefer practical technological features that enhance their understanding and touring experience. Electronic guide services, offering audio commentary, interactive maps, and detailed information about exhibits, meet visitors' specific needs for museum tours, thus receiving higher evaluations.

This phenomenon suggests that museums should focus more on increasing visitors' awareness and improving these technologies' interaction design and display effects to enhance the visitor experience. Consideration should be given to increasing investment in and improving highly practical technological features like electronic guide services. It will help meet visitors' direct needs, enhancing overall satisfaction and the museum's appeal.

C15 (easy access to the museum and convenient parking) and C22 (the museum offers membership services) are not directly related to interaction or technological innovation. However, they are important components of the visitor experience and significantly impact overall satisfaction.

For indicator C15, the Beijing Palace Museum enjoys excellent accessibility due to its central location in Beijing. This results in a relatively low importance index as most visitors expect cultural institutions in the city center to have good transport connections. The low satisfaction score may reflect that parking facilities in the central area face severe challenges despite the convenience of transportation. This could negatively impact visitors' initial experience and overall satisfaction. When analyzing indicator C22—the importance and satisfaction of museum membership services—consideration should be given to the unique nature of the Beijing Palace Museum. As one of the largest public museums in China, the Palace Museum's main tasks are

cultural education and the protection of cultural heritage. This aligns with the inclusive nature of public institutions. Therefore, the design of services and activities at the Palace Museum considers broad public access rather than exclusive services.

Within the framework of public museums, membership services may not be seen as a core service function, as the mission of public museums is more focused on providing equal access to everyone.[37] This contrasts with private museums, which may rely heavily on membership services as a significant source of revenue and operational support, and they offer exclusive benefits to attract and retain customer loyalty.[38] Due to these structural differences, visitors to the Palace Museum may not view membership services as essential to their visiting experience. This explains why the importance and satisfaction indices for C22 are relatively low. The visitors may feel they can enjoy the museum's main exhibitions and activities even without membership services.

## **6. Conclusion and Recommendations**

Through quantitative analysis, this study comprehensively assessed the importance and satisfaction of customer experience at the Beijing Palace Museum. It deeply explored the museum's performance in providing cultural experiences and challenges as a cultural heritage institution. The study categorized 27 indicators into four areas: areas of strength, maintenance, improvement, and weakness. This classification allows for a deeper understanding and assessment of Beijing Palace Museum's performance across various dimensions and its relationship with customer satisfaction.

The research findings indicate that the Palace Museum excels particularly in strength, including architectural style, cultural environment, themes, content, exhibition methods, and souvenir modules. Customers' high appreciation of these aspects reflects recognition of their aesthetic and cultural values and highlights the high regard for the educational functions of the Palace Museum. Additionally, customers have a very positive evaluation of the Palace Museum's contribution to cultural education, particularly in its role in inspiring personal and world views. These factors shape the emotional value of the Palace Museum. Its exhibitions and activities convey this emotional value, delivering profound cultural emotions that customers widely recognize. The study also identifies areas for improvement, such as content updates on the official website, staff services, and customer feedback. Regarding updates to the official website, the study shows that although the website provides abundant information and resources, the speed and timeliness of content updates do not meet all visitors' expectations. In the digital age, visitors increasingly demand the latest information. The museum's website is the primary external communication window, directly affecting the pre-visit experience and satisfaction with its timely information updates. Additionally, while the overall quality of staff service is affirmed, customer feedback indicates room for improvement, particularly in handling service details and personalized responses. Visitors expect more enthusiastic, professional, and personalized service. This requires the museum further to enhance staff service skills and customer care capabilities. Lastly, while a customer feedback mechanism exists, its efficiency and transparency could still be improved. Customer feedback is vital for continuous improvement and meeting visitor needs. An effective feedback processing mechanism can help the museum quickly address customer concerns, enhancing customer satisfaction and loyalty.

It is particularly noteworthy that the Palace Museum demonstrates a forward-looking approach to applying new technologies. However, a need remains to ensure these technologies enhance the experience and improve its usability and educational value. For example, while the introduction of Virtual Reality (VR) and Augmented Reality (AR) technologies is innovative, more intuitive interaction designs are needed to meet the needs of

visitors from diverse backgrounds.

These findings highlight the core role of the Palace Museum as a cultural and educational institution serving as a guardian of history and a bridge for modern cultural exchanges. By displaying a wealth of historical artifacts and offering a variety of cultural activities, the Palace Museum successfully blends the allure of traditional culture with the demands of modern society. It provides a platform for cultural understanding and personal growth. The results of this study offer important insights for the Palace Museum and other cultural institutions, particularly in how to enhance customer experiences through improved exhibition quality and services. This analytical framework helps the Palace Museum make more precise adjustments to future exhibition strategies and customer interaction plans. This framework also provides an effective tool for similar institutions to evaluate and enhance customer experiences.

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