International Conference of Organizational Innovation 2024
Proceedings

ICOI
2024

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

Strategies for Enhancing Audience Engagement in Cultural Exhibition Space Design

Chun-Pin Huang[1], Fang-Pang Chang[2] & Ying-Chieh Wu[3]

[1]School of Architecture, Feng Chia University, Taiwan, R.O.C

Email: jimmyjimmy98886@gmail.com

[2]Department of Fashion Styling and Design Communication, Shih Chien University, Taiwan, R.O.C

Email: b780708@gmail.com.edu.tw

[3]Institute of Cultural and Creative Design, Tung-fang Design University, Kaohsiung, Taiwan;, R.O.C

Email: tetsuyatw@me.com

Abstract

In this study, we explored strategies to enhance audience engagement through cultural exhibition space design. Utilizing the Evaluation Grid Method (EGM) and the Kano Two-Dimensional Quality Model, this research aims to identify key spatial design factors that influence emotional and cognitive engagement from the consumer's perspective. This includes examining how spatial layout, interactive devices, and the presentation of cultural elements can enhance the overall experience of the audience. The research methodology combined in-depth interviews and surveys, providing data that helped us analyze which design features most effectively capture and maintain audience interest and participation. The findings of this study offer specific guidance for cultural exhibition designers to improve exhibition space design, thereby attracting more audience participation and enhancing the educational and entertainment value of exhibitions. The study emphasizes the importance of innovative space design in increasing audience engagement in cultural exhibitions, providing an empirical foundation for future exhibition design practices.

Keywords: Cultural exhibition, space design, Evaluation Grid Method, Kano Two-Dimensional Quality Model.

1. Introduction

The design of cultural exhibition spaces requires the consideration of numerous factors, including the content displayed, interactive technology, and spatial layout, each imbued with significant meaning. When selecting exhibition elements, it is essential to consider not only their aesthetic and educational value but also to impart specific symbolic meanings such as cultural heritage, innovative spirit, and social concern. These symbolic meanings can imbue the exhibition with greater significance and memorability.

Through differentiated spatial design, exhibitions can stand out in the market. Innovative display combinations, carefully designed exhibit titles, and unique presentation methods can attract the audience's attention and enhance their viewing experience. Additionally, integrating exhibits with other services, such as unique decor, special guide equipment, or personalized interactive experiences, is a key strategy for creating competitive advantages. The meanings

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

conveyed through the exhibits allow the exhibition to build a unique brand image, enhance its market position, and achieve sustained competitive advantages.

To effectively enhance audience satisfaction with cultural exhibition spaces, designers must understand the emotional needs of the audience concerning the exhibition and clarify the relationship between emotional quality attributes and satisfaction. This study uses the Evaluation Grid Method (EGM) of affective engineering to summarize the emotional attributes and attractive factors that influence audience preferences. Further, it applies the Kano Two-Dimensional Quality Model to explore how these attractive factors in exhibition design affect audience satisfaction, determining different quality classifications.

2. Literature Review

2.1 Exhibition Space Design

Exhibition space design plays a crucial role in modern exhibition activities, directly affecting the visitor experience and the overall success of the exhibition. Research indicates that the use of Augmented Reality (AR) and Virtual Reality (VR) technologies in museums significantly enhances interactivity and immersion, thereby increasing visitor acceptance and satisfaction (Li, 2024).

Studies on image creation show that intricate visual design enhances the artistic value of exhibitions, providing visitors with profound visual and emotional experiences (Li, 2024). Curatorial practice suggests that exhibition space design should be flexible and adaptable to different themes and exhibits, creating diverse and dynamic exhibition experiences (Tseng, 2022).

Good spatial configuration and human-centered design can improve visitor satisfaction, making the viewing process comfortable (Cheng, 2022). Reimagining historical contexts through innovative design can revive cultural significance, allowing visitors to learn historical knowledge and feel the weight of history (Tang, 2023).

The impact of the influencer economy on commercial space design suggests that modern exhibition space design should incorporate popular elements to attract younger audiences, thereby increasing exposure and influence (Yang, 2020). Planning architectural exhibition spaces reasonably guides visitors effectively, enhancing efficiency and experience quality (Chen, 2020).

Research on exhibition experiences emphasizes that visitors not only look at exhibits but also experience the exhibition's atmosphere and narrative. Creating immersive environments through coordinated design elements can evoke emotional responses (2020). Studies on Kunqu Opera Museum exhibition spaces highlight the need to combine traditional cultural exhibitions with modern design concepts to attract younger generations (Yeh, 2021).

Research on mobile museums finds that they can transcend the spatial limitations of traditional museums, bringing cultural resources to broader audiences and achieving greater social impact (Lin, 2021). Studies on complex commercial space planning stress the importance of

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

multifunctionality in exhibition space design, achieving both commercial and cultural value through innovative concepts (Lin, 2020).

Research on home lighting art design points out that appropriate lighting can highlight exhibit details and create specific atmospheres, enhancing the visual experience for visitors (Hsieh, 2020). Studies linking narrative spaces with the experience economy argue that exhibition space design should focus on storytelling, enabling visitors to feel a strong emotional connection during their visit (Tseng, 2020).

In summary, modern cultural exhibition space design should focus on the integration of technology, aesthetic effects, cultural content, and functionality. Innovative design and human-centered configuration can enhance visitor experience and satisfaction. These studies provide a theoretical foundation and practical guidance for cultural exhibition space design.

2.2 Miryoku engineering and evaluation grid method

AAttractiveness reflects the subjective preferences of consumers, derived primarily from their value judgment systems. This system encompasses sensory perception, psychological decision-making, and sociological and artistic evaluations by consumers (Ujigawa, 2000). Sanui (1996) categorized the research method of Miryoku engineering into two steps. The first step involves evaluating the target object based on the respondent's like or dislike; the second step entails clarifying the meaning of their answers through follow-up questions and integrating the responses. The charm elements of the product are then analyzed, and a relevant structural grid diagram is created. This approach is known as the evaluation grid method (EGM). Chen Chun-Chih et al. (2012) emphasized that EGM interviews should primarily involve highly engaged groups. Through paired comparisons of various features from actual user behavior cases, true and credible evaluations and opinions are collated. This method allows for the integration of the corresponding relationship between abstract feelings, which have been challenging to capture in the past, and specific conditions.

2.3 Kano Model

To address the limitations of the linear hypothesis, Kano (1984) introduced the Kano model with "psychological quality" as its central concept, highlighting a "two-dimensional" perspective to understand the relationship between product quality and satisfaction. The linear (one-dimensional) model posits that for a specific quality element, satisfaction will increase or decrease in direct proportion to the level of quality. However, this principle does not apply universally to all quality factors. The two-dimensional quality model challenges this assumption, suggesting that satisfaction may not necessarily occur even if all quality factors are present, and dissatisfaction may arise or satisfaction may not be directly related to quality.

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

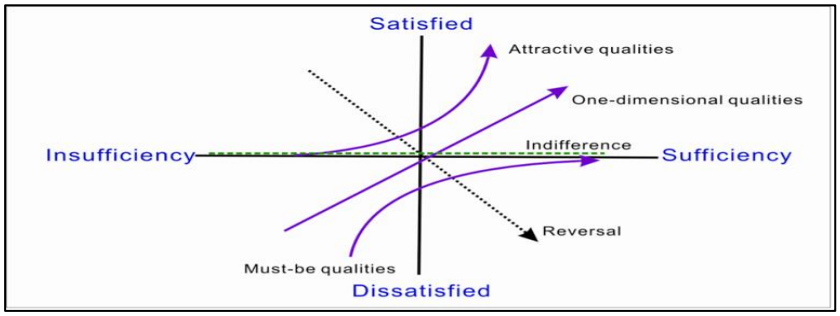


Figure 1. Empowerment Model

A straightforward method for identifying different Kano categories—one-dimensional, attractive, and must-be qualities—is to use a Kano questionnaire (Kano et al., 1984). In this questionnaire, customers indicate their satisfaction or dissatisfaction with a given scenario. The first scenario assumes the quality (criterion) is present or sufficient, while the second scenario assumes the quality is absent or insufficient. Customers must choose their level of satisfaction in each scenario. By combining the responses in the Kano evaluation table (Table 1), the product criterion can be classified as attractive, must-be, one-dimensional, indifferent, or reversal.

Table 1. Kano evaluation table

Product Criteria/attributes		Insufficiency				
		Satisfied	It should be that way	I am indifferent	I can live with it	Dissatisfied
Sufficiency	Satisfied	Q	A	A	A	O
	It should be that way	R	I	I	I	M
	I am indifferent	R	I	I	I	M
	I can live with it	R	I	I	I	M
	Dissatisfied	R	R	R	R	Q

(A- attractive, O-one-dimensional, M-must-be, I-indifference, R-reversal, Q-questionable)

3. Research Method

The first phase of the study employed the Evaluation Grid Method (EGM) of Miryoku engineering, involving interviews with five experts—three with over 20 years of experience in spatial design and two in exhibition planning and coordination. The aim was to identify which aspects of cultural exhibition space design evoke attractive emotional attributes in the audience. The EGM interview method is divided into three parts: original reasons, specific details, and abstract concepts. After identifying the original reasons, the abstract feelings were explored upward, and the specific details were connected downward (Chen Chun-Chih and Li Yi-Jie, 2008). By organizing the interview content and drawing structural diagrams, the study ultimately derived an evaluation grid diagram of the attractiveness factors in cultural exhibition space design.

The second phase of the study involved quantitative analysis. Based on the results from the

Published by: FMI FORUM MANAJEMEN INDONESIA
Training & Research Institute JERAMBA ILMU SUKSES

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

initial EGM interviews, the Kano quality model was applied to investigate visitors' preferences for cultural exhibition space design attributes. The goal of this phase was to determine whether the factors influencing visitor preferences exhibit nonlinear relationships.

4. Finding and Discussion

4.1 EGM Interview Results

Based on interviews with five respondents, an EGM network diagram was compiled. The interviews revealed that the goal of cultural exhibition space design is to create a unique and memorable visitor experience. The sophistication of the exhibition space reflects high levels of craftsmanship and professionalism. Intricate design, linked to aesthetic effects and a sense of novelty, provides visitors with distinctive visual and sensory experiences, leaving a lasting impression. The themes and cultural elements of the exhibition are manifested through spatial layout and display content. Each exhibit area is designed to evoke emotional resonance in visitors, allowing them to feel the depth of the culture, inspiration, and satisfaction during their visit. The richness and educational value of the exhibition content are also key factors of attractiveness, enhancing the audience's knowledge and cultural literacy.

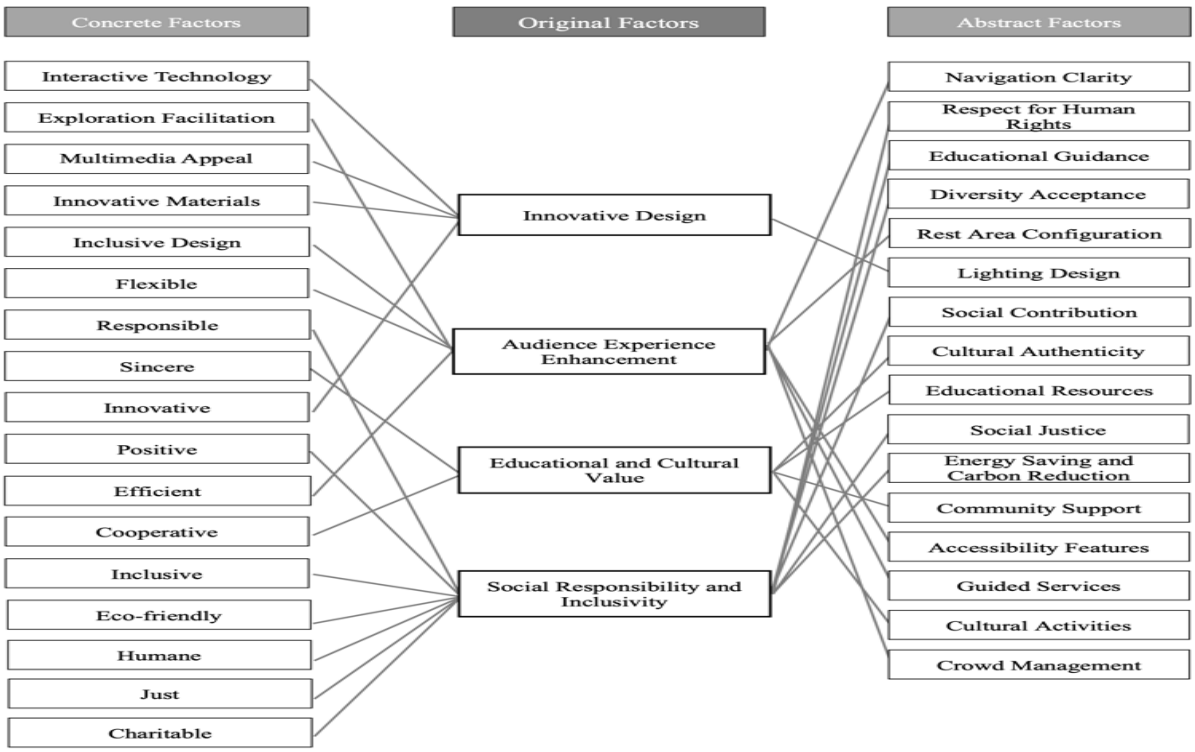


Figure 2. EGM Diagram

Furthermore, the use of contemporary technology and innovative display techniques, along with features of commemorative value, add unique flavors and memorable points to the cultural exhibition. Employing modern technology ensures the contemporary feel and interactivity of

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

exhibits, while innovative display techniques bring unique presentation styles and forms. The application of innovative techniques and commemorative features provides visitors with novel viewing experiences and profound memories. The color coordination, aesthetic appeal of the exhibits, and their narrative quality further enhance the visual appeal and storytelling aspect of the exhibition, enabling visitors to gain more cultural and emotional resonance while appreciating the exhibits.

In conclusion, this study suggests that the design of cultural exhibition spaces should focus on multiple dimensions of experience, including visual, interactive, and emotional aspects, to ensure that visitors feel the rich cultural significance and deep emotional connections.

4.2 Kano Statistical Results

4.2.1 Reliability Analysis

This study employs purposive sampling and snowball sampling methods. Purposive sampling involves the researcher subjectively and deliberately selecting samples that meet the needs of the study. The snowball sampling method, also known as network sampling, is characterized by the interconnected network relationships among respondents. The effective number of questionnaires recovered for this study was 103. The reliability of the collected questionnaire results was tested using the statistical software SPSS.17. The Cronbach's α value for the overall Kano questionnaire was 0.856, indicating a high level of reliability.

Attributes	Cronbach's α for forward items after item deletion.	Cronbach's α for reverse items after item deletion.
01. Interactive Technology	0.81	0.91
02. Educational Guidance	0.82	0.90
03. Exploration Facilitation	0.82	0.90
04. Rest Area Configuration	0.82	0.90
05. Lighting Design	0.82	0.90
06. Educational Resources	0.82	0.90
07. Cultural Authenticity	0.81	0.91
08. Multimedia Appeal	0.81	0.90
09. Inclusive Design	0.83	0.91
10. Innovative Materials	0.83	0.91
11. Accessibility Features	0.82	0.91
12. Guided Services	0.82	0.90
13. Cultural Activities	0.81	0.91
14. Crowd Management	0.82	0.91
15. Navigation Clarity	0.82	0.90
Overall assessment	0.82	0.90

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

4.2.2 Kano Analysis Findings

This study classifies and analyzes various quality elements in cultural exhibition space design based on the KANO model. The KANO model uses basic elements (M), one-dimensional elements (O), indifferent elements (I), attractive elements (A), questionable elements (Q), and reverse elements (R) to determine the impact of each quality element on audience satisfaction.

According to the Kano quality classification results in Table 3, interactive technology, educational guidance, exploration facilitation, educational resources, multimedia appeal, inclusive design, guided services, and cultural activities are rated as attractive elements, which significantly enhance audience satisfaction. Rest area configuration, lighting design, cultural authenticity, innovative materials, accessibility features, crowd management, and navigation clarity are rated as one-dimensional elements; their presence is crucial to satisfaction, while their absence leads to dissatisfaction.

A few quality elements, such as inclusive design and accessibility features, are rated as indifferent elements, indicating that these factors do not significantly affect audience satisfaction. Cultural authenticity and rest area configuration are rated as questionable or reverse elements in certain situations, meaning their presence could lead to dissatisfaction.

Overall, designers should prioritize elements with high attractiveness and one-dimensional qualities to maximize the enhancement of audience experience and satisfaction.

Table 3. Percentage Distribution of Kano Quality Attributes

Attributes	M	O	I	A	Q	R	Kano
01. Interactive Technology	2.06	10.30	9.27	73.13	7.21	1.03	A
02. Educational Guidance	0.00	28.84	6.18	50.47	16.48	3.09	A
03. Exploration Facilitation	1.03	32.96	8.24	52.53	8.24	2.06	A
04. Rest Area Configuration	6.18	47.38	10.30	33.99	6.18	1.03	O
05. Lighting Design	5.15	60.77	7.21	24.72	6.18	1.03	O
06. Educational Resources	5.15	33.99	13.39	44.29	8.24	0.00	O
07. Cultural Authenticity	11.33	51.50	8.24	24.72	5.15	4.12	A
08. Multimedia Appeal	3.09	33.99	10.30	48.41	7.21	1.03	O
09. Inclusive Design	4.12	23.69	20.60	42.23	7.21	6.18	A
10. Innovative Materials	2.06	47.38	11.33	33.99	9.27	1.03	O
11. Accessibility Features	7.21	36.05	22.66	33.99	5.15	0.00	O

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

12. Guided Services	1.03	25.75	17.51	51.50	7.21	1.03	A
13. Cultural Activities	7.21	33.99	17.51	41.20	3.09	1.03	A
14. Crowd Management	18.54	74.16	3.09	6.18	3.09	0.00	O
15. Navigation Clarity	10.30	76.22	5.15	10.30	3.09	0.00	O

5. Conclusion

In the highly competitive environment of cultural exhibitions today, excellent exhibition space design is of strategic importance for enhancing audience engagement. Based on the results of this study, designers should focus on creating interactive and exploratory environments that encourage active participation and exploration, thereby enhancing the visitor experience. At the same time, it is crucial to provide ample and comfortable rest areas, and to use scientific lighting design to highlight exhibit details and create an appropriate display atmosphere. Ensuring the authenticity and accuracy of cultural elements is essential to enhance the exhibition's credibility and educational value. The importance of providing adequate accessibility facilities should not be overlooked, as it is necessary to meet the needs of diverse audiences and provide an inclusive visiting environment. Future designs should prioritize elements that significantly enhance audience satisfaction and ensure the completeness of basic elements to maximize the visitor experience and satisfaction. These recommendations will aid in the continuous improvement and development of cultural exhibition design, promoting higher levels of audience engagement and satisfaction.

References

Chen, Y. J. (2020). The impact of architectural exhibition space planning characteristics on visitor behavior patterns. (Master's thesis, National Taichung University of Science and Technology, Taiwan), 1-143.

Cheng, H. H. (2022). Research on the design of chain and boutique restaurant spaces: A case study of Hong Yang space design. (Master's thesis, National Taiwan Normal University), 1-89.

Huang, M. (2020). Research on the intervention of internet celebrity economy in commercial space design creation. National Taiwan Normal University (Taiwan).

Lee, C. (2024). Study on visitors' acceptance of AR and VR digital virtual exhibition technology in museums. (Doctoral dissertation, Chung Yuan Christian University, Taiwan), 1-212.

Lee, J. Y. (2021). Research on the composition factors of Kunqu Opera Museum exhibition space.

Lee, R. Y. (2024). [Shadow play] – Research on the visual aesthetics of viewing through shadow composition. (Master's thesis, National Taichung University of Science and Technology, Taiwan), 1-131.

Lin, H. E. (2020). Research on the planning and design of [Utopia] complex commercial space. (Master's thesis, Chung Yuan Christian University, Taiwan), 1-185.

e-ISSN: 3064-6030
FMI, Vol 1
23-25 July 2024

Lin, M. J. (2021). The promotion and design of mobile museums: A case study of the Penghu Life Museum [Drama Treasure Box]. Museum Studies Quarterly, 35(1), 95-107.

Su, H. (2023). Re: Taiwan's new cultural movement - Spatial imagination of the reappearance of the historical site of Dadaocheng. (Master's thesis, Chung Yuan Christian University, Taiwan), 1-170.

Tseng, I. L. (2020). The industrial competitiveness of narrative space and experience economy: A case study of Loho Wine Cellar on Xinyi Road, Taipei. (Master's thesis, Chung Yuan Christian University, Taiwan), 1-132.

Tseng, M. J. (2022). Curatorial practice of cultural interpretation in a fluid city - [Unstoppable Flow]. (Master's thesis, Chung Yuan Christian University, Taiwan), 1-105.

Tseng, Y. L. (2020). Research on the artistic design of home lighting. (Master's thesis, Chung Yuan Christian University, Taiwan), 1-109.

View the way or join the fun? — A study on the exhibition experience of cultural and creative exhibitions. Nanhua Social Science Journal, 2020.

Yang, S. C. (2020). Research on the creation of commercial space design influenced by internet celebrity economy. (Master's thesis, National Taiwan Normal University, Taiwan).

Sanui, J. (1996). "Visualization of users' requirements: Introduction of the Evaluation Grid Method." Proceedings of the 3rd Design & Decision Support Systems in Architecture & Urban Planning Conference, 1, 365-374.

Ujigawa, M. (2000). "The evolution of preference-based design." Research and Development Institute.

Wang, Y.-H. (2013). "The Influence of Menu Design on Consumers' Purchase Intention." Master's thesis, Department of Marketing, National Chung Hsing University.

Wang, Y.-H. (2018). "The Effects of Augmented Reality Application on Interactive Marketing and User Experience: A Case Study of Western Dessert Menu Design." Master's thesis, Department of Digital Technology Design, National Taipei University of Education.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/4.0/)