FACTORS INFLUENCING THE VISITOR SATISFACTION OF INTANGIBLE CULTURAL HERITAGE MUSEUMS IN CHINA: A CROSS-SECTIONAL QUANTITATIVE STUDY

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Abstract: This study investigates the factors influencing visitor satisfaction in Intangible Cultural Heritage (ICH) museums. It focuses on identifying how specific elements such as service management, facilities and environment, business atmosphere, and exhibition content contribute to visitors' perceived value, experience, and overall satisfaction. A quantitative research approach was employed, utilizing a questionnaire survey administered to 329 visitors from three ICH museums in China. The survey collected data on visitors' perceptions of museum attributes and their impact on satisfaction. Statistical analyses were conducted to examine relationships among variables, identifying key factors that enhance or hinder visitor experiences. The findings reveal that service management, facilities and environment, and business atmosphere positively influence visitors' perceived value and visiting experience. Business atmosphere significantly enhances visitor satisfaction directly, highlighting its critical role in shaping museum engagement. While exhibition content positively impacts perceived cognitive value, it shows no significant direct effect on the visiting experience. These results underscore the varying roles of museum attributes in shaping visitor perceptions and experiences, offering key insights into museum management strategies. The study provides actionable recommendations for enhancing visitor satisfaction in ICH museums. By prioritizing service quality, improving facilities, fostering an engaging business atmosphere, and curating cognitively enriching exhibitions, museum management can better support preservation and dissemination efforts. Furthermore, attention to these factors can help create a more immersive and educational environment, fostering deeper connections between visitors and cultural heritage. Strengthening service standards and optimizing museum environments will enhance visitor engagement, ultimately contributing to long-term sustainability. Additionally, this research contributes to the broader understanding of visitor behavior in heritage tourism, offering valuable guidance for future strategies in ICH museum operations. The findings can serve as a foundation for policymakers and museum administrators to develop visitor-centered strategies that ensure both cultural preservation and economic viability. By integrating these insights, ICH museums can improve their role in cultural transmission while meeting the evolving expectations of modern visitors.

Keywords: intangible cultural heritage, intangible cultural heritage museum, perceived value, visitor satisfaction

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INTRODUCTION

In recent years, there has been a surge in concepts surrounding the preservation and promotion of Intangible Cultural Heritage (ICH). Indeed, society has acknowledged the significance of cultural diversity and cultural heritage sustainability (Gilman, 2022). Traditionally, museums are places where tangible artifacts are preserved, but have recently evolved into indispensable institutions that contain dynamic and living elements of culture, including ICH. At its Extraordinary General Assembly in Prague on August 24, 2022, the International Council of Museums (ICOM) provided a new definition of museums: *Museums are nonprofit and permanent and have a mission to study, collect, conserve, interpret, and present cultural heritage* (Wang et al., 2024). This transition underlines museums' critical role in the preservation, interpretation, and dissemination of ICH. Handayani et al., 2024 emphasized the vital role of museum research activities in unravelling the historical and social values of cultural heritage and offering a scientific foundation for its preservation and transmission.

Nevertheless, the success and impact of museums largely depends on visitor satisfaction as it influences visitor retention and overall educational and cultural mission (Trihandayani et al., 2022). Previous studies have suggested that understanding visitor satisfaction with museums requires a multidimensional perspective. Museum architecture, program design, accessibility, and communication skills are important aspects of the overall visitor experience that influence visitor satisfaction and determine engagement and loyalty (Hu et al., 2021). Using structural equation modeling (SEM), Ballantyne et a examined the short- and long-term impacts of the visiting experience and provided robust theoretical and methodological support. In an extensive study on tourism satisfaction, Durman & Nadlifatin (2024) highlighted the significance of destination image, emotional connection, and personal engagement in affecting tourist satisfaction and loyalty. This theoretical background is equally applicable to the context of intangible cultural heritage museums.

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Likewise, Carvache-Franco et al. (2022) explored the correlation among the quality of experience, perceived value, satisfaction, and behavioral intention in cultural heritage tourism, indicating that quality of experience and perceived value are important factors that directly influence tourist satisfaction. Through their research Sustacha et al. (2023) further suggested that inbound tourists' satisfaction primarily depends on four dimensions, i.e., charm, knowledge/pleasure, tradition, and value, which together reflect tourists' positive assessment of ICH.

Based on their research on the National Archaeological Museum of G.A. Sanna (Sardinia, Italy), divulged the role of motivation, experience, duration of visit, and sociodemographic factors in creating overall satisfaction. However, Situmorang et al. (2020) elucidated the impact of exhibition communication media on visitor satisfaction and willingness to revisit, accentuating the positive role of communication media in augmenting the visiting experience. Furthermore, Hyun et al. highlighted the significance of enhancing the physical environment of art museums in the Gangwon region to augment the visiting experience. Trunfio et al. (2022) explored the Bandung Geological Museum and emphasized that the choices made by visitors when making decisions markedly influenced their satisfaction levels. Meanwhile, Wang et al., (2024) investigated older visitors' perceived value from the perspective of cultural heritage sites, mainly in the use of immersive technologies to enhance the museum experience, emphasizing the potential of technology in enhancing the museum experience. Cheng et al. (2022) further corroborated the key role environmental factors in influencing visitor assessments by measuring the influence of museum recreational areas on visitor satisfaction and perceived emotional quality. In their research on the Mandala Wangsit Silliwangi Museum, Rasoolimanesh et al. (2022) recognized factors influencing visitors' perceived quality, with a special emphasis on the importance of service interactions, evidence of services, product features, and product richness on visitor satisfaction. Furthermore, Siu et al. investigated the impact of reference effects and customer engagement in museum visits, and concentrated on the role of disconfirmation, self-identification, and customer engagement in influencing customer experience and satisfaction.

Overall, existing studies have comprehensively examined various factors influencing visitors' museum satisfaction, covering extensive dimensions from the physical environment of museums to communication media, cultural interactions, and visitors' decision-making, thereby enriching the theoretical basis of museum research and offering valuable insights into museum practice. This study focuses on a specific type of museum, but there is little research on ICH museums. Therefore, three comprehensive ICH museums in China were taken as the example to perform a visit satisfaction study and examine the factors influencing ICH museums' satisfaction. Meanwhile, construct a more comprehensive satisfaction evaluation model was constructed to determine key factors influencing visitor satisfaction, and offer insights for augmenting the visiting experience at ICH museums. Notably, it is essential to understand key factors influencing visitor satisfaction for ICH museum management policymakers and cultural practitioners working on ICH preservation and promotion. Furthermore, this study contributes to the wider discussion of museology and heritage management and provide practical suggestions to increase the role of ICH museums in contemporary society.

The aim of this study is to investigate the factors influencing visitor satisfaction in Intangible Cultural Heritage (ICH) museums, with a focus on identifying the critical elements that enhance the perceived value and overall visiting experience. By selecting three prominent ICH museums in China—the Nanjing Museum of ICH, the Zhejiang Museum of ICH, and the Grand Canal Museum of ICH—this research seeks to explore how these institutions, which showcase both provincial and national ICH, fulfill their dual role of cultural preservation and public engagement. Particular attention is given to the Grand Canal Museum of ICH, which uniquely integrates ICH elements from eight provinces along the Grand Canal Basin, offering a comprehensive representation of regional cultural diversity. The study aims to analyze the impact of service management, facilities and environment, business atmosphere, and exhibition content on visitor perceptions. It seeks to uncover how these factors contribute to cognitive and emotional engagement, shaping visitors' overall satisfaction with their museum experience. Additionally, the research aims to provide actionable insights for museum management to optimize their strategies, ensuring that ICH museums remain vibrant centers of cultural education and preservation. Through a detailed examination of these dynamics, this study aspires to enhance the understanding of visitor satisfaction in ICH museums and contribute to the sustainable development of these cultural institutions.

LITERATURE REVIEW

ICH preservation and diffusion have been an area of much interest in the recent past because they play a very critical role in maintaining cultural identity and promoting community engagement. ICH museums, therefore, provide an essential outlet for this preservation process, engaging the visitor in immersive experiences that connect him or her with cultural traditions. Visitor satisfaction as a predictor of success for the museum has long been associated with increased visitor repeat visits, successful outcomes of visit experiences, and respect for various cultures.

Several characteristics have been suggested as critical toward creating positive visit experiences-these include mostly service quality and attractions and, to a great degree, exhibits. However, still, this remains a knowledge gap in terms of how these interface with notions of cultural engagement as per modern expectations, especially under the context of ICH museums, which interface both tangible and intangible culture.

Service management is a literature determinant of visitor satisfaction. In museums, the service quality is multidimensional in that it covers aspects such as interaction with the staff, provision of information, and response to visitor needs. The physical environment, encompassing the facilities and ambiance of the museum, impacts the visitors' emotional responses and experience. Aesthetic, accessibility, and environmental comfort are the determinants that create memorable visits, according to recent studies. The business climate of museums also is an important characteristic, with commercial activities -- such as shops selling souvenirs and themed cafes -- needed to be included. Although sometimes

considered a secondary role to cultural and educational missions, it is increasingly recognized that they can contribute to a more holistic cultural experience for visitors by improving visitor engagement and satisfaction.

1. Service management and visitors' perceived value and experience

Service management is very crucial in shaping the perceptions and experiences of visitors in museum settings. Various studies have proven that effective service management, including well-trained staff, responsive services, and efficient operations, positively impacts the perceived value and satisfaction of visitors. For example, Abusaada & Elshater, (2021) noted that personalized interactions and prompt resolution of queries greatly improve visitor retention and satisfaction. However, these studies often miss the cultural uniqueness of ICH museums, where service management must align with the preservation of intangible heritage. A limitation of existing research is the lack of a comprehensive model linking service management directly to perceived value and visiting experiences, particularly in culturally significant settings like ICH museums.

2. Environmental facilities and visitors' cognitive value and experience

The environmental facilities in a museum, from the spatial arrangement to accessibility and comfort, play a crucial role in shaping cognitive engagement and the overall experience. Previous studies, such as Vassiliadis et al. (2021), suggest that visitors are more cognitively engaged when facilities are constructed to facilitate exploration and interaction. Still, the studies rarely distinguish between the effects of physical and digital facilities, which are increasingly a part of modern museum experiences. Most of the previous studies do not address the contextual needs of ICH museums. This gap indicates the need to probe deeper into the impact of environmental facilities.

3. Exhibition content and its influence on visitors' perceptions

The content of exhibitions is the heart of the cognitive and emotional engagement of visitors. Research by Damanik & Yusuf (2022) shows that the relevance, interactivity, and narrative coherence of exhibition content significantly impact the cognitive value and emotional experiences of visitors. However, the most common drawback is the emphasis on traditional exhibits, with less focus on integrating technology to make the content more dynamic and accessible. In addition, ICH museums tend to lack scientific studies on how the content in exhibitions directly relates to the visit experience, wherein cultural narratives hold a significant importance.

4. Commercial atmosphere and visitor experience

The commercial atmosphere in the form of retail offerings, dining options, and other services makes the entire museum experience whole. According to Geng et al. (2021), a commercial atmosphere like this will allow the visitors to create an unforgettable experience. Indeed, research done recently, such as by Sustacha et al. (2023), suggests that a rich commercial atmosphere improves visitors' sensory and emotional experiences. However, these studies primarily focus on general tourism and do not investigate the subtle dynamics of cultural and heritage contexts. The ICH museums provide a specific context in which commercial activities may support cultural diffusion.

5. Linking experience and perceived value to satisfaction

Visitor satisfaction often sums up the perceived value and the quality of experience of visitors. Research by Tubillejas-Andrés et al. (2020) suggests that the perceived value, which is primarily driven by cognitive and emotional experiences, has a strong correlation with visitor satisfaction. However, most of these studies are generalized and do not focus on the interaction of particular factors, such as cultural significance and authenticity, in ICH museums. Furthermore, the role of intangible factors, such as emotional attachment and cultural pride, is often underrepresented.

6. Interconnections between exhibition content, commercial atmosphere, and satisfaction

The content of an exhibition can indirectly affect visitor satisfaction through its influence on the commercial atmosphere. According to Rivero et al. (2023) , interesting exhibitions attract more visitors, which in turn creates a vibrant commercial atmosphere that boosts satisfaction. However, there is limited empirical evidence that links exhibition content with commercial atmosphere in ICH museums. Furthermore, while commercial aspects may be added to make the experience more enjoyable, over-commercialization threatens to compromise the authenticity of cultural heritage.

RESEARCH METHODOLOGY AND DESIGN

A quantitative method was adopted and simple random sampling was used for questionnaire data collection during June 11, 2024–July 2, 2024. The questionnaire measurement scale was extracted from the evaluation dimensions of the existing tourists' assessments. Afterwards, combined with the previous research, the two elements of satisfaction and perceived value were introduced to the questionnaire design. It is worth noting that assessment dimensions can be easily extracted from existing visitor evaluations to measure the average visitor; furthermore, this is widely supported by existing research. These evaluation dimensions were obtained from the actual visit experience and are illustrative and generalizable because they can be used to depict visitors' perceptions of critical elements. Besides, the dimensions derived from experience feedback are stable and consistent and exhibit similar effects across contexts (Chen et al. 2022).

Moreover, the methodology for deriving these dimensions is simple and straightforward, which increases the efficiency of the study and reduces the time and resources required to create new dimensions as shown in Figure 2. Mu et al. (2021) used natural language processing techniques to derive semantic information about tourist attractions from travel blogs, thus improving tourist information depiction and comprehension effectiveness. Although the assessment dimensions obtained from actual visit experiences are descriptive and stable, they can also simplify the research process, improve the efficiency of the study, and provide a solid theoretical and empirical foundation for assessing ordinary tourists.

In this study, the evaluation dimensions were extracted by selecting the visit evaluation of China Meituan.com about the ICH hall of Nanjing Museum. With its large user base and comprehensive coverage, as well as China's leading local life service platform, Meituan is an effective source for collecting visitor evaluation data. Besides, the platform's user

evaluation system is comparatively mature, and users are required to register for an account and log in before posting their evaluations, a mechanism that reduces false evaluations and thus enhances the authenticity and reliability of evaluation data. Furthermore, the evaluations on Meituan.com are usually more comprehensive, including tourists' evaluations of service, environment, price, etc., which provides rich information for the study.

In order to safeguard the relevance of the evaluation content and nonlegacy, the keyword Nanjing Museum (Figure 1) was entered into the Meituan.com platform, yielding 29,274 evaluations as of May 30, 2024. In addition, the evaluations with the keyword "ICH" were performed per the assessment of tourists' experience of the non-heritage museum of Nanjing Museum, yielding 2007 evaluations.
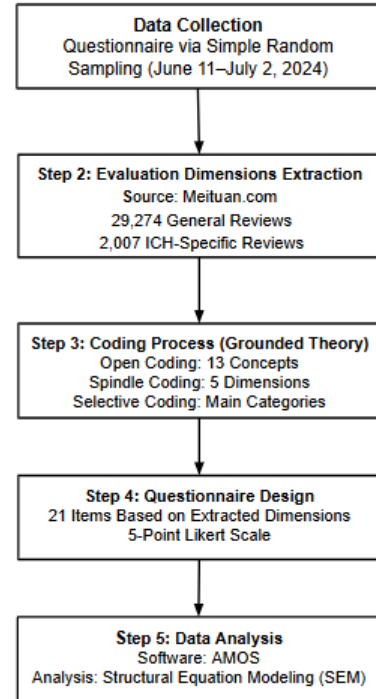

Figure 1. Geographical location of study area

Figure 2. Flow of Methodology

In addition, the evaluation content of visitors of the ICH Exhibition Hall of Nanjing Museum using the grounded theory, an inductive approach that enables making theories based on observations and involving systematic coding, memo writing, and theoretical sampling, was explored and extracted and involves . Thus, measurement dimensions were not set before analysis. Through open coding, principal axis coding, and then selective coding, the structured analysis of the evaluation data was completed to summarize the rows of concepts, corresponding categories, and main categories sequentially. First, open coding primarily simplified the evaluation content into keywords and critical sentences and created keyword labels without emotional coloring to develop 13 essential concepts (Table 1).

Table 1. Example of open coding for evaluation indicators for visitors to an ICH museum

Concept	Item	Original Statement
A1 Quality of Service and Management	Service Attitude	"I have never seen worse work attitudes than here."
	Management Chaos	"Few guides, chaotic order."
	Humanized Management	"Humanized management needs improvement; waiting time to enter the museum is over 30 minutes, and there are no rain shelters on rainy days."
A2 Facilities and Environment	Poor Environment	"Do not go recently; there is construction noise."
	Comfortable Environment	"There is a vintage tea house inside; when you are tired, you can have a pot of tea and listen to music."
A3 Education and Cultural Communication	Cultural Education	"You can learn about Su embroidery and Suzhou women workers."
		"It allows kids to experience the knowledge from their history textbooks in reality."
		"Listening to the guide and bringing kids to learn in the museum was eye-opening for them."
		"The most direct witness to thousands of years of Chinese civilization history."
	Cultural Display	"Dynamic display of ICH."
		"There are also operatic excerpts, velvet flowers, Yun brocade, dough figurines, embroidery, etc."
		"Inviting inheritors to demonstrate ICH skills live."
	Cultural Experience	"The folk art in the ICH Museum amazed me; these handicrafts still shine despite the passage of time."
		"The museum displays folk crafts like woodblock printing, gold foil, lanterns, and also features Kunqu Opera, Baiju, and storytelling."
A4 Guidance and Indication System	Unclear Guidance	"The signs are unclear; it is hard even to ask the staff."
	Poor Guidance Experience	"No guides; everything relies on tourists lining up voluntarily; people are cutting in line."
		"Do not go recently; there is construction noise."

A5 Visiting Experience	Negative Experience	"Poor experience."
		"Poor experience: two entrance lanes, the I.D. card verification at the turnstile is extremely slow."
	Positive Experience	"Very impressive. It took the kids to learn about history and culture."
A6 Additional Services	Additional Services	"In the vintage tea house, savoring a cup of fragrant tea and listening to a piece of storytelling."
		"Need to sell some small ICH items."
		"I bought a small sachet in the Museum (10 yuan each). It was not expensive and very nice."
A7 Exhibits and Display Methods	Diverse Display Methods	Dynamic display of ICH items.
		Free 3D movies, craftspeople explaining on site.
	Rich Exhibits	"Master craftsmen, folk tea houses, paper cutting, lantern folk crafts."
		"The museum displays folk crafts like woodblock printing, gold foil, and lanterns."
A8 Time and Crowd Management	Large Crowds	"Too many people cannot see everything."
	Visiting Time	"Just skimming through takes over 3 hours."
		"Recommend more than three hours for a visit; the museum is big."
A9 Transportation and Accessibility	Inconvenient Transportation	"Hard to find parking; nearby spots are all full."
	Convenient Transportation	"The subway is the most convenient; just walk 500 meters after getting off."
A10 Location and Fatigue Management	Location and Fatigue	"The ICH Museum is at the exit, can only exit, not enter."
		"The museum can only be exited, not entered; this layout is the first I have seen."
		"The ICH Museum is at the exit. After three hours of walking, I was too tired to visit this Museum."
A11 Visiting Priority	Visiting Priority	"The ICH Museum and the Digital Museum can be skipped."
		"The ICH Museum is unnecessary if time is limited."
		'The last museum feels like it is just there to make up the numbers, not meaningful."
		"The ICH Museum is not necessary to visit."
A12 Commercial Atmosphere	Commercial Atmosphere	"The folk museum also has an ICH, but it is like a pure commercial center."
		"For educational purposes, watching a few short videos on ICH is better. I originally planned to visit the Museum, but it was all about selling things, although it is indeed ICH."
		"The museum is not big, selling traditional items like herbal medicines and calligraphy materials."
A13 Cultural Experience	Cultural Experience	"I booked a theatre show at the small theatre in the evening. It was great. I fell in love with such national ICH."
		"The folk art in the ICH Museum amazed me; these handicrafts still shine despite the passage of time. This visit gave me a deeper understanding and respect for Chinese culture and made me cherish and protect our cultural heritage even more."

Second, spindle coding linked the extracted concepts to re-abstract, enhance and synthesize them to validate the correlation between the concepts of ICH museum experience. Based on the abovementioned 13 core dimensions revolving around the thread of the ICH museum experience, selective coding was reconducted to extract and integrated, constituting five main categories, among which each category represented a different dimension (Table 2)

Table 2. Results of spindle coding and selective coding

Core dimensions	Corresponding categories	Value connotations
Service and management (A1, A4)	Staff service attitudes	The Museum's service delivery influences visitors' evaluation of the overall visiting experience.
	Management order	
	Humanized management	
Facilities and environment (A2, A9, A10)	Environmental Quality	The location and facilities of the ICH museum directly influence visitors' experience and display of ICH items.
	Facility Support	
	Convenience of transportation	
Exhibition content and educational significance (A3, A7, A13)	Cultural and educational experience	The ICH exhibition content can enable visitors to comprehensively understand and experience the ICH culture.
	Mode of cultural dissemination	
	Cultural content display	
Visiting experience (A5, A8, A11)	Visiting Experience	Visiting experience: Visitors' value and satisfaction with the ICH depict their overall evaluation.
	Visiting hours and crowds	
	Guided tours and directions	
Balance between culture and commerce (A6, A12)	Cultural communication	Cultural communication: Balance between presenting culture and offering commercial activities at the ICH
	Value-added experience	
	Sale of ICH products	

In consumer behavior research, cognitive value is an essential concept because it influences consumers' assessment of products and services, whereas perceived value is a critical concept and has significant implications for product and service evaluation. Tubillejas-Andrés et al. (2020) defined perceived value as the consumers' overall assessment based on the content received and provided; and Trunfio et al. (2022) expanded this concept to include the satisfaction of technological learning. Using latent structure multidimensional scaling, Xie et al. (2021) examined the fundamental dimensions of perceived value across brands and market segments. Anasrul & Sutrisno (2023) investigated the effect of extrinsic cues, such as price and branding, on consumers' perceived quality, sacrifice, and value. Ashrafi & Easmin (2023) explored the effect of perceived product quality and risk in Slovenia, whereas Li et al. (2021) examined the role of emotional factors on the value of the cruise vacation experience. Later, Adamska (2020) developed a scale to assess the overall perceived value

of travel purchases, and recognized six dimensions of perceived value in the banking industry. Sulaiman et al. (2023) investigated service quality, perceived value, and behavioral intentions of airline passengers, performed a literature review on perceived value in the service industry, Marx (2023) involved perceived value in the theory of planned behavior, and explored the perceived value of wearable devices and demonstrated a more significant impact of perceived benefits. Overall, these studies demonstrated that perceived value affects consumer behavior in different industries. For non-heritage museums, we defined their perceived value as visitors feeling the charm of ICH and creating new perceptions during their visit. Furthermore, we added three question items based on scale.

Finally, visitor satisfaction is deemed as the core category from the grounded theory, which is a crucial attribute of museum services, particularly in a competitive tourism industry (Simonin et al., 2022). To date, several factors of visitor satisfaction with museums have been explored, including cognitive value, place attachment, and word-of-mouth recommendations (Torres, 2022). Othman et al. examined and developed scales like the Museum Experience Scale (MES) and the Multimedia Guided Tour Scale (MGS), which quantitatively measured visitor engagement, learning, and emotional connection. Factors influencing satisfaction comprise service quality, edutainment, and tangible aspects like cleanliness and ticketing processes. Demographic aspects like nationality, gender, and education also influence satisfaction levels. Indeed, multimedia-guided tours have been established to markedly enhance visitor engagement. Although satisfaction measures help determine improvement areas, such as tour guide knowledge and desk setup, high satisfaction levels correlate with visitors' willingness to recommend the museum to others, which is essential for museums to increase their market base to international visitors. Thus, the questionnaire design was modified by a measurement questionnaire comprising four questions about satisfaction with visiting the ICH, based on the questionnaire scale of Stemmer et al. Initially, a 21-item questionnaire was designed using the grounded theory to measure visitors' evaluations of their experiences with the Nanjing Museum's ICH Hall. The questionnaire items were measured using a five-point Likert scale (1 = strongly disagree, 3 = average, and 5 = strongly agree). Table 3 presents the specific questionnaire.

Table 3. Satisfaction measurement items for the ICH museum visiting experience

Core Dimension	Item
Service and Management (SM)	I am satisfied with the service attitude of the staff at the ICH Museum.
	I am satisfied with the management order of the ICH Museum.
	I am satisfied with the humanized management measures of the ICH Museum.
Facilities and Environment (FE)	The environment of the ICH Museum is perfect.
	The supporting facilities of the ICH Museum are complete.
	The location of the ICH Museum is easy to find.
Exhibition Content (EC)	The exhibition content of the ICH Museum is rich.
	The exhibition content of the ICH Museum is very educational.
	The ICH display methods in the ICH Museum are diverse.
Visiting Experience (VE)	I feel good about the fact that I can experience and interact with the ICH Museum.
	The visiting time arrangement and crowd management of the ICH Museum are reasonable.
	The guidance and indication system of the ICH Museum is apparent.
Commercial Atmosphere (CA)	The ICH Museum can sell handicrafts that reflect cultural characteristics.
	The balance between cultural display and commercial activities at the ICH Museum is good.
	The pricing of ICH products at the ICH Museum is reasonable, and the quality is good.
Perceived Value (PV)	The ICH Museum is a place for pursuing knowledge and providing mental relaxation and entertainment.
	The ICH Museum is a place for pursuing knowledge and providing mental relaxation and entertainment.
	The ICH Museum is an effective source of ICH knowledge.
Visitor Satisfaction (VS)	When I want to find a quiet place to visit, the ICH is my first choice.
	I am satisfied with this visit to the ICH Museum.
	This visit to the ICH Museum met my expectations.

Thus, the following research hypotheses was proposed based on the dimensions explained above, as shown in Figure 2.
- H1. Service management directly and positively influences visitors' perceived value.
- H2. Service management directly and positively influences visitors' perception of their visit.
- H3. Environmental facilities directly and positively influence visitors' cognitive value.
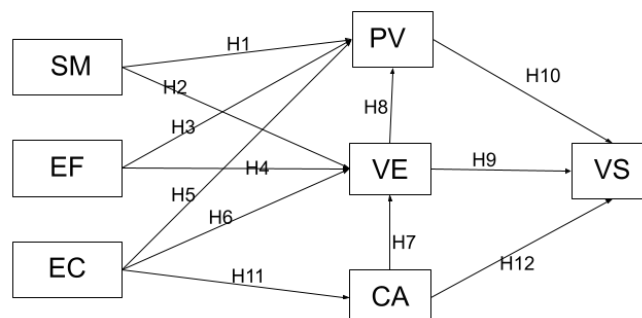

Figure. 2. Conceptual assumptions hypothetical model diagram

- H4. Environmental facilities directly and positively influence visitors' experience.
- H5. Exhibition content directly and positively influences visitors' perceived value.
- H6. Exhibition content directly and positively influences visitors' experience.
- H7. Commercial atmosphere directly and positively influences the visitors' sense of experience.
- H8. Sense of visiting experience directly and positively influences visitors' perceived value.
- H9. Visiting experience directly and positively influences visitor satisfaction.
- H10. Perceived value directly and positively influences visitor satisfaction.
- H11. Exhibition content positively influences the commercial atmosphere.
- H12. Commercial atmosphere positively influences visitor satisfaction.

Before the formal survey, a small-scale online pilot test was conducted, collecting 50 responses. The reliability analysis revealed Cronbach a coefficient of 0.915, which signifies that the scale has a very high internal consistency and, thus, fulfills the criteria for conducting a formal test. Per Nunnally Cronbach a coefficient of ³0.70 is considered reliable for the scale, whereas DeVellis stated that a coefficient of 0.80–0.90 is considered good, with >0.90 signifying excellent reliability. Hence, the internal consistency of our scale was significantly higher than the recommended standard, validating its suitability for subsequent formal testing. Participants were tourists who had visited the ICH Museum and 329 questionnaires were collected (Figure 3). There is a wide age distribution of participants, with 4.6% aged <18 years, 38.3% aged 18–25 years, 24.6% aged 26–30 years, 17.3% aged 31–40 years, 8.2% aged 41–50 years, 4.3% aged 51–60 years, and 2.7% aged >60 years. The occupation of participants was diverse, with 26.4% company employees, 2.1% freelancers, 4.9% retired, 10.6% students, 14.3% researchers, 8.2% governmental organizations, 18.2% enterprises and institutions, and 15.2% other occupations. Thus, the widely distributed age and occupation of the participants rendered the questionnaire data highly representative. Overall, the collected data was quantitatively analyzed and verified through descriptive statistics and SEM to validate the hypotheses proposed above.
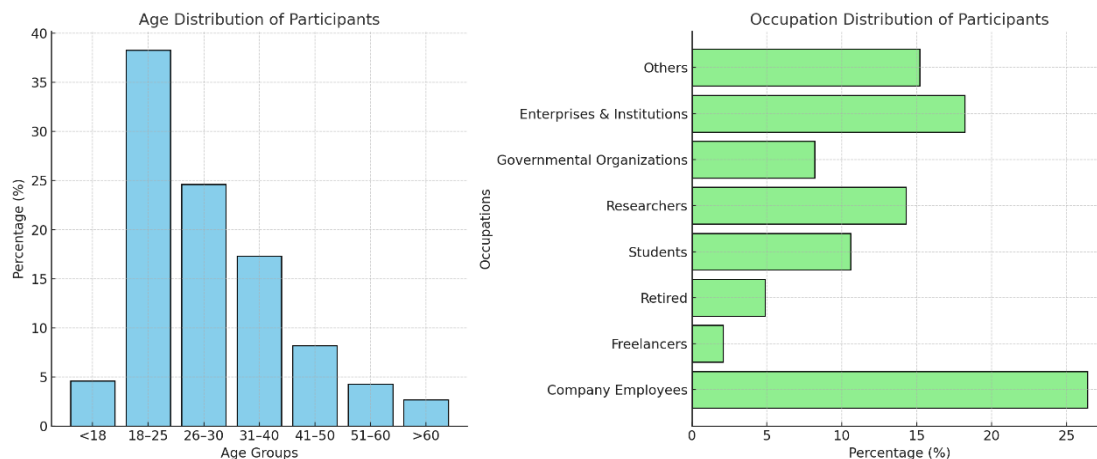

Figure 3. Demographic profile of respondents

RESULTS

1. Exploratory factor analysis

First, the exploratory factor analysis was conducted using SPSS 25.0 to derive the factor structure. The results revealed a KMO value of 0.896, indicating the suitability of data for factor analysis. Per Kaiser' criteria, a KMO value 0.8–0.9 denotes a "good" range, and the significance level of Bartlett's test of sphericity is <0.05, suggesting a sufficient correlation between the data to be suitable for factor analysis (Lorenzo-Seva & Ferrando, 2021).

In the factor extraction process, the variance-maximizing orthogonal rotation method was used and the feature root >1was selected as the basis for factor formation, based on Kaiser's criterion that a factor with a feature root >1 can describe more variance than a single variable. Finally, 77.46% of the total variance contribution was extracted, suggesting that the extracted factors could explicate the variance of the original data better (Hossain et al., 2024). Table 4 presents the results of the exploratory factor analysis. The loadings of each factor exceeded 0.5, and most of the factors loaded >0.6, signifying good convergent validity of these factors; this result corroborates the coding relationship explained per the grounded theory, which preliminarily proves the reasonable validity of the satisfaction measurement scale.

Table 4. Results of the exploratory factor analysis

Rotated Component Matrix							
	Component						
	1	2	3	4	5	6	7
SM1	**0.873**				0.113		
SM2	**0.845**	0.139	0.118	0.168		0.117	
SM3	**0.844**			0.148	0.165	0.135	
FE1			0.145		0.186	0.12	**0.813**

Item							
FE2		0.135	0.206	0.104	0.131		**0.798**
FE3	0.147	0.157	0.163	0.2		0.187	**0.756**
EC1	0.137	**0.855**		0.151		0.125	
EC2		**0.831**	0.119	0.178	0.131		0.126
EC3		**0.833**		0.155	0.139	0.146	0.133
VE1	0.135	0.188	0.214	0.175	**0.795**	0.184	0.135
VE2	0.158	0.123		0.191	**0.803**	0.185	0.217
VE3	0.148	0.123	0.231	0.209	**0.746**	0.212	0.145
CA1		0.122	0.146	0.113	0.106	**0.821**	0.173
CA2	0.171	0.107	0.164	0.183	0.206	**0.774**	
CA3	0.17	0.139	0.143		0.203	**0.764**	0.124
PV1	0.154	0.15	0.14	**0.797**	0.179	0.103	0.19
PV2	0.186	0.238	0.18	**0.772**	0.187	0.176	0.122
PV3	0.137	0.181	0.13	**0.807**	0.18	0.13	0.118
VS1			**0.81**	0.16	0.136	0.22	0.148
VS2	0.146	0.107	**0.797**	0.129	0.187		0.186
VS3	0.111		**0.799**	0.122	0.128	0.168	0.199

Besides, as shown in Table 5, the analysis using the average variance extracted (AVE) presented that the AVE values ranged from 0.611 to 0.729, which were all greater than 0.5, and the square root was more critical than their correlation coefficients with other variables, thereby fulfilling the criteria for discriminant validity. In addition, the Cronbach *a* coefficient and compositional reliability (C.R.) were used to measure the reliability level of the model. The results showed that Cronbach *a* coefficient was 0.810–0.875 and the constitutive reliability (C.R.) was 0.830–0.890, signifying high reliability of the measurement model (Karácsony et al., 2023).

Table 5. Pearson correlation matrix and average extraction variation Note: the oblique angle is AVE; $**P < 0.005$

Item	SM	FE	EC	VE	CA	PV	VS
SM	0.729						
FE	0.254**	0.623					
EC	0.287**	0.359**	0.705				
VE	0.392**	0.458**	0.403**	0.611			
CA	0.357**	0.376**	0.362**	0.514**	0.619		
PV	0.408**	0.424**	0.469**	0.535**	0.423**	0.627	
VS	0.314**	0.476**	0.306**	0.483**	0.442**	0.436**	0.643
CR	0.890	0.832	0.878	0.825	0.830	0.835	0.844
Cronbach *a*	0.875	0.810	0.868	0.865	0.819	0.863	0.843

4.2. Validated factor analysis and measurement model of satisfaction with visits to ICH museums

To further substantiate the scientific validity of the exploratory factor analysis, a confirmatory factor analysis (CFA) was performed using AMOS 24.0. CFA was primarily used to determine whether the correlation between potential variables and observed variables in a theoretical model corroborates the expectations, as well as validate the applicability and accuracy of the model. Briefly, the method considers the residuals and assesses whether the correlations between the factors and the corresponding indicators conform to the researcher's theoretical model. Furthermore, the reliability and fitness of the measurement model were depicted through a series of goodness-of-fit indicators (e.g., CFI, TLI, and RMSEA) (Byrne et al., 2021), the results are shown in Table 6.

Table 6. Overall fit coefficients of the ICH museum visitor satisfaction model

Item	CMIN/DF	RMSEA	GFI	AGFI	CFI	IFI	TLI
Coefficient value	1.415	0.036	0.937	0.916	0.98	0.98	0.976

As can be seen from Table 6, the results revealed that the absolute fit indices of model had a CMIN/DF value of 1.415, indicative of a good model fit, as a range of 1–3 is typically considered appropriate (Byrne et al., 2021). The RMSEA value was 0.036, <0.05, suggesting an excellent model fit; the GFI value was 0.937, >0.9, exhibiting a good model fit ; the AGFI value was 0.916, >0.9, further supporting the suitable model fit; the CFI value was 0.98, >0.95, indicating an excellent model fit; the IFI value was 0.98, >0.9, showing a good model fit; and the TLI value was 0.976, >0.95, further demonstrating an excellent model fit (Lorenzo-Seva & Ferrando, 2021).

Overall, these results suggest an excellent fit of the model developed in this study for measuring the satisfaction of visiting ICH museums, thereby confirming the reliability and validity of the model. Hence, these results not only underscore the solidity of the study but also guarantee the credibility of the findings.

Table 7 presents the results obtained after examining the level of the model path coefficients, demonstrating the path relationship between the variables in the developed model and their significance. According to Anderson and Gerbing's criteria, the C.R. value is more significant than 1.96 and $P < 0.001$ (***), indicating the statistical significance of the path. In addition, Table 7 and Figure 4 show that service management (SM) has a significant positive effect on perceived value (PV) and visit experience (VE); facilities and environment (FE) has a significant positive effect on PV and VE; exhibition content (EC) has a significant positive effect on PV and business atmosphere (CA); CA has a significant

positive effect on VE; PV has a significant positive effect on VE; and VE has a significant positive effect on visitor satisfaction (VS). In addition, PV has a significant positive effect on VS and CA has a significant positive effect on VS.
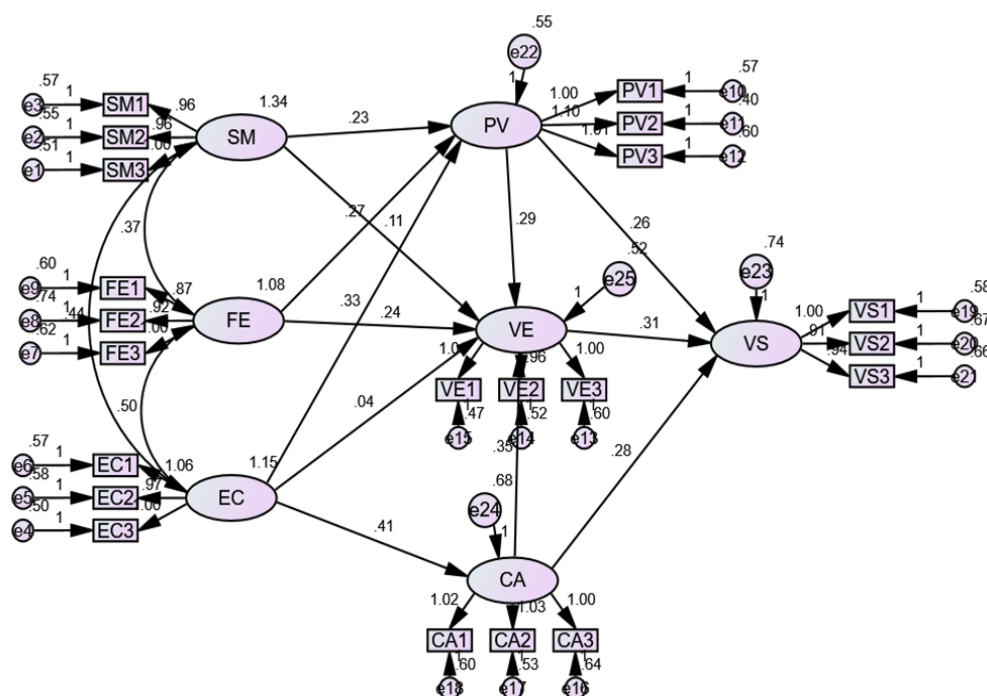

Figure 4. Results of hypothesized relationship test for ICH museum visitor satisfaction

Nevertheless, EC exerts no significant impact on VE. Furthermore, $P > 0.05$ and C.R. < 1.96 suggest that the display content exerted no significant direct impact on VE. This can be attributed to that some aspects of the content did not completely satisfy visitors' expectations (Hung & Tuan, 2024).

Table 7. Results of hypothesized relationship tests for satisfaction with ICH museums

Hypothesize			Estimate	S.E.	C.R.	P	Hypothesis results
SM	→	PV	0.268	0.05	4.66	***	Accepted
FE	→	PV	0.276	0.063	4.291	***	Accepted
EC	→	PV	0.347	0.06	5.426	***	Accepted
EC	→	CA	0.468	0.057	7.061	***	Accepted
SM	→	VE	0.127	0.052	2.166	0.03	Accepted
FE	→	VE	0.24	0.066	3.613	***	Accepted
EC	→	VE	0.042	0.071	0.572	0.567	Rejected
CA	→	VE	0.319	0.071	5.023	***	Accepted
PV	→	VE	0.284	0.077	3.754	***	Accepted
VE	→	VS	0.294	0.088	3.537	***	Accepted
PV	→	VS	0.238	0.078	3.292	***	Accepted
CA	→	VS	0.241	0.081	3.513	***	Accepted

DISCUSSION

ICH museums play a crucial role in sustaining and publicizing ICH and upholding cultural diversity. Using grounded theory, we identified key dimensions influencing visitor satisfaction at ICH museums and validated our hypotheses through CFA and AMOS. The key indicators of visitor satisfaction include service management, facilities and environment, exhibition content, cognitive value, visit experience, and commercial atmosphere, all positively influencing visitor satisfaction. Notably, visiting experience has the greatest impact on visitor satisfaction.

First, we found a significant positive impact of service management on both perceived value and visiting experience, aligning with (Chatzigrigoriou et al. (2021) findings that quality services enhance cognitive value and visiting experience. This confirms the key role of service management in augmenting visitor satisfaction in ICHs.

Second, facilities and environment also significantly positively impact perceived value and visiting experience. The quality of these directly influences visitors' perceptions and experiences, as observed by Cong, (2021) Optimizing facilities and environment can markedly augment visitors' cognitive value and visiting experience in ICHs.

Third, exhibition content, while not significantly impacting visiting experience directly, has a significant positive impact on perceived value and commercial atmosphere. ICH museums offer content-rich and diversified exhibitions, enhancing visitors' knowledge base and cultural identity. The system of knowledge behind the objects is vital for culture's survival, as highlighted by Wang et al., 2024. Nikolakopoulou et al. (2022) claimed that display content is indispensable for a museum's attractiveness, though its impact must be evaluated in the context of the overall experience.

Fourth, the commercial atmosphere significantly positively impacts visiting experience and visitor satisfaction. High-quality exhibition content augments visitors' cultural identity, enhancing their visiting experience and overall satisfaction. Policies, public participation, and continuous innovation can balance commercialization and heritage preservation. Visitors gain unique experiences through ICH snacks and techniques, increasing engagement by selling souvenirs and providing ICH activities, while upholding cultural authenticity. Museums have effectively preserved traditional crafts and skills through interactive training programs, promoting visitor participation, experience, and ICH sustainability.

CONCLUSION

This study empirically verifies the remarkable effects of service management, facilities and environment, exhibition content, and cognitive value on visiting experience and visitor satisfaction of ICH museums. A surge in perceived value directly amplifies visitors' experience and satisfaction, corroborating Geng et al. (2021) assertion that customers' cognitive value is a vital factor influencing their satisfaction. Overall, this study provides empirical support for ICH museums to enhance their service quality and optimize display content, offering an essential theoretical basis for subsequent research.

Limitations

This study has limitations: geographical and cultural sample bias affecting generalizability, cross-sectional design lacking dynamic causality insights, and heavy reliance on questionnaires potentially causing social desirability bias. Future research should extend samples across regions and cultures, adopt a longitudinal design and integrate qualitative methods.

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