Article

Critical Factors for Predicting Users' Acceptance of Digital Museums for Experience-Influenced Environments

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Abstract: Digital museums that use modern technology are gradually replacing traditional museums to stimulate personal growth and promote cultural exchange and social enrichment. With the development and popularization of the mobile Internet, user experience has become a concern in this field. From the perspective of the dynamic stage of user experience, in this study, we expand ECM and TAM by combining the characteristics of users and systems, thereby, constructing the theoretical model and 12 hypotheses about the influencing factors of users' continuance intentions toward digital museums. A total of 262 valid questionnaires were collected, and the structural equation model tested the model. This study identifies variables that play a role and influence online behavior in a specific experiential environment: (1) Perceived playfulness, perceived usefulness, and satisfaction are the critical variables that affect users' continuance intentions. (2) Expectation confirmation has a significant influence on perceived playfulness, perceived ease of use, and satisfaction. (3) Media richness is an essential driver of confirmation, perceived ease of use, and perceived usefulness. The conclusions can be used as a reference for managers to promote the construction and innovation of digital museums and provide a better experience to meet users' needs.

Keywords: user experience; digital museum websites; users' continuance intention; expectation confirmation; media richness

1. Introduction

In the information age, digital information is more accessible and accepted by the public than the traditional narrative, and has become a popular communication mode in culture and art. The function of museums is more than platforms for physical preservation, display, cultural memory, public education, information dissemination, and academic research [1]. More organizations have realized the importance of museums (with a website on the Internet) for the online communication, dissemination, and protection of intangible cultural heritage [2]. The gradual application of new technologies and ideas, such as digital media, virtual reality, and interaction design, has dramatically improved the level of digital museums and promoted the interconnection of visitors, objects, and data [3]. In this context, the development of digital museums has a good application prospect. Nowadays, the nature of museums has undergone a paradigm shift from "object-centric" to "experience-centric" [4]. Therefore, understanding the behavior of visitors to online museums is crucial for developing useful websites and improving user engagement.

Bhattacherjee [5] pointed out that user acceptance is only the first step for information systems, while its ultimate success depends more on continuous usage. Many developers in the research field of e-learning systems [6], online libraries [7], and social-networking services [8] have proven the value of this finding. A digital museum as an information system promotes culture and disseminates knowledge through the Internet medium. Good user experiences and continuance intentions are also vital to its ultimate success. Published studies on understanding visitor behaviors and conducting systematic digital evaluation [1,9,10] have

mainly been carried out in the West. We surveyed Mandarin-language literatures and discovered that most of the articles were at the level of qualitative research, focusing on concept discussion [11], exhibition suggestions [12], and technical implementation [13]. Relevant studies [14,15] on the improvement of digital museums from user requirements and user behaviors were slightly weak. In particular, there is a lack of systematic research on user cognition and behavior in experience to find out the key factors affecting user satisfaction and decision making.

On the basis of user experience-related theories, technology acceptance models, and expectation confirmation models, in this study, we construct a research model and related hypotheses of digital museum users' continuance intentions from the perspective of users and systems. By discussing the factors that influence user acceptance behavior, the purpose of this study is to provide helpful references for relevant managers, technicians, and researchers to construct "user-oriented" digital museums in the future. Moreover, this research can help museum curators and managers of other cultural institutions use advanced technology to make more informed decisions about online strategies and technical resource allocations.

2. Literature Review

2.1. Digital Museum

The rise of information and communication technologies and the emergence of technological innovations (mobile and handheld devices, multi-touch screens, interactive 3D, augmented reality, and virtual reality) has seen a paradigm shift in museums' agendas [9]. This shift has led to an interest in the relationship between new technology, museum interpretation, and visitors' experiences. A current trend is to make museum collections widely accessible by digitizing cultural heritage collections for the Internet [16,17], building on the idea of the visitor-centered museum [18]. In order to attract more visitors to a digital museum website, it is essential to carry out an effective evaluation [2,16]. Previous studies have highlighted the importance of the overall impression of website design aesthetics to digital museum visitors [19–21]. Because VR makes interactions more natural in digital museums, several researchers have highlighted an urgent need to evaluate the specific capabilities of the VR aspect [22–24]. In addition, professionals have called for a user-oriented approach to digital museums that explores how online visitors use and interact with digital museum resources [17,20,25–28]. For example, Marty [26,27] explored aspects of visitor behavior in a series of surveys. Skov et al. [17,20] discussed the characteristics of online museum visitors' search behaviors from a user perspective and summarized it into four points.

In general, a digital museum is an information project that provides users with digital material and intangible heritage services. Usually, it uses digital means to convert the collections of physical museums into data resources, maximizing the sharing of valuable information through the Web [3]. The digital museum discussed in this article is limited to museums that use the Internet to display and disseminate, which is not uncommon in China. They have gradually become a new bridge for museums to closely connect with users through the Internet. Therefore, it should be a simple digital presentation of cultural resources and also a system construction of information service based on user needs. In this sense, there are still details to be worked out.

However, one of the consequences of the COVID-19 pandemic is that the world has been dramatically changed. During periods of international quarantine and the need to stay at home, e-services have provided opportunities for visitors and a substitute for normal existence [29]. For example, a digital museum service becomes an engaging tool for promoting culture and disseminating knowledge that is particularly effective for visitors [29]. As a result, museums will increasingly focus on using their websites to communicate with their audiences [30,31].

2.2. User Experience

The international standard ISO 9241-210 defines user experience as "people's cognitive impression and response to the products, systems or services they use and expect to use". Because of the subjectivity of user experience, it is difficult for researchers to observe the whole process objectively. Therefore, they build factor models to test user experience from different dimensions. For example, Vyas et al. [32] used an interaction-centric approach to propose the APEC model. Mahlkwe [33] pointed out that in the process of information interaction, both technical factors (e.g., system usefulness and ease of use) and non-technical factors (e.g., hedonic quality and visual attractiveness) will affect the user experience of a website. Nascimento et al. [34] believe that user experience includes three stages of expectation, interaction, and reflection and should consider the user's cognitive, psychological, emotional, and cultural aspects.

Although experimental contexts have received greater attention in IT research, our knowledge of variables that play a role and affect user behavior in specific experience environments is still limited. Consequently, our research focuses on these issues by investigating user experience with digital museum websites. This study draws on the relevant theories proposed by Nascimento et al. to form the dynamic phase framework of user experience to guide the following research (Figure 1).
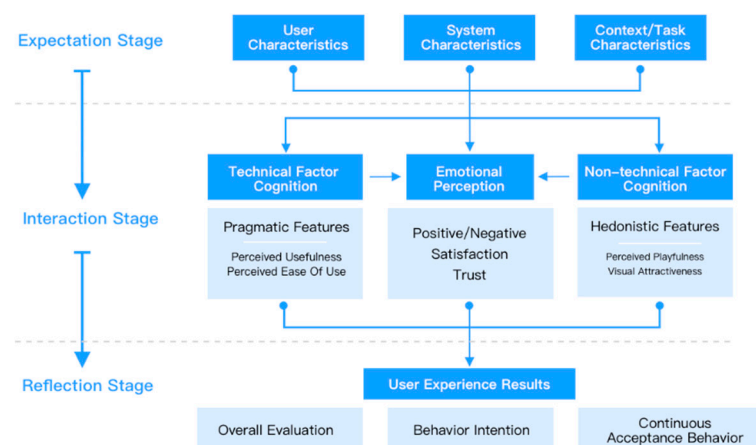
Figure 1. A dynamic phase framework for user experience.

3. Research Model and Hypotheses

3.1. Reflection Stage: Satisfaction (SAT) and Continuance Intention (CI)

Bhattacharjee developed the expectation confirmation model (ECM) based on the basic framework of the expectation confirmation theory (ECT) proposed by Oliver, which was used to analyze user satisfaction and continuous adoption behavior to an IS system [5]. Satisfaction is a psychological state, which refers to a subjective evaluation produced by comparing actual feelings and expected values. Continuance intention refers to the user's subjective feelings to continue using the system after experiencing it. In previous research, it has been documented that there is a positive correlation between the two dimensions to adopt new IT systems [7,35,36]. For example, Lin [35] found that users' satisfaction is positively correlated with continuance intention in the research of web learning performance. Therefore, when users are satisfied with the process of acquiring information using a digital museum, they will continue to use it; otherwise, they may interrupt or switch to other methods. Hence, we hypothesize:

Hypothesis 1 (H1). *Satisfaction can positively affect users' continuance intention.*

3.2. Interaction Stage: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Playfulness (PP)

Cognition and emotion are two essential factors in the study of user behavior. When users use the system, the satisfaction of cognitive requirements and the enhancement of positive emotion cognition will improve the relationship between perception and expectation, and then they will obtain an excellent experience. Therefore, the research on user behavior should consider the influence of cognition and emotion on user beliefs, attitudes, and decision-making behaviors, and pay attention to emotion to make up for the deficiency of the cognitive model [37]. Cognitive value (including practical value and hedonic value) should not be ignored. In the TAM, perceived usefulness and perceived ease of use measure the practical value of users' technology adoptions, while perceived playfulness measures hedonic value.

Perceived usefulness reflects the degree to which users believe that using a specific information system would improve their job performance [38]. For a digital museum, if the functions and information content provided by the system meet users' needs to a high degree, they will think it is helpful, and then generate positive emotions, directly affecting its continuance intention. Perceived ease of use refers to the extent to which a user perceives a particular technology, accessing websites, Internet functions, and Web-interface is easy to use [38]. More specifically, if users get familiar with an online system or platform without spending too much time and effort, they will be more satisfied and willing to continue using it. Studies have proven the positive correlation between perceived usefulness, ease of use, and continuance intention [5,35,39].

Perceived playfulness is similar to the concept of perceived enjoyment in research on information systems, which is described as three interdependent dimensions: concentration, curiosity, and enjoyment [40]. Perceived playfulness is described as "the extent to which the individual (a) perceives that his or her attention is focused on the interaction with the Web; (b) is curious during the interaction; and (c) finds the interaction intrinsically enjoyable or interesting" [41]. Lin [42], Thong et al. [39] found that perceived playfulness has a significant positive impact continuance behavior of website users. The interface design using virtual reality technology has the characteristics of immersion, interaction, and intuitiveness. Sylaiou et al. [24] showed that VR presence has a strong relationship with AR objects and enjoyment. Through interactive displays, digital museums can provide audiences with real experiences to stimulate learners' interests. Hence, this study hypothesizes:

Hypothesis 2 (H2). *Perceived playfulness can positively affect users' continuance intentions.*

Hypothesis 3 (H3). *Perceived usefulness can positively affect users' continuance intentions.*

Hypothesis 4 (H4). *Perceived ease of use can positively affect the satisfaction of users'.*

Hypothesis 5 (H5). *Perceived ease of use can positively affect users' perceived playfulness.*

Hypothesis 6 (H6). *Perceived ease of use can positively affect users' perceived usefulness.*

3.3. Expectation Stage: Confirmation (CON) and Media Richness (MR)

Motivation and expectations of visiting the website are essential factors that affect user experience. Bhattacherjee [3] believes that IS users' continuance decisions are similar to customers repurchase decisions. User expectation is a variable that contains expectations of the experience of using museum websites, and is expressed in the aspects of perceived usefulness, usage characteristics, perceived ease of use, and content quality [43]. Expectation confirmation as personal characteristics is an important influencing factor of user satisfaction, perceived playfulness, and perceived ease of use [31]. Relevant studies have shown that when users' expectations for entertainment and ease of operation of an online

platform are confirmed, perceived playfulness and ease of use can be triggered to a greater extent [44,45], that is to say, if users' confirmations are closer to their actual experiences using digital museums, their perceptions of playfulness, ease of use, and satisfaction will be improved.

Media richness is the ability of a medium to produce information that can change a recipient's understanding within a specific time interval [46]. Its evaluation criteria include immediate feedback, number of cues, channels utilized, personalization, and language variety [46]. Most digital museums adopt media with these four features. Digital museums, for example, enhance user understanding by providing multiple cues such as images, text, and video. Furthermore, some studies have found that a medium that allows rich information to be sent and received in various ways is more likely to be considered valuable and easy to use [1,47]. Digital museums provide users with good interactive feedback that can promote their understanding and simplify the learning process. It is possible to increase users' attraction and expectations, and thus improve their satisfaction. Therefore, we regard media richness as a system characteristic in understanding the adoption of digital museums. Hence, this study hypothesizes:

Hypothesis 7 (H7). *Confirmation can positively affect users' satisfaction.*

Hypothesis 8 (H8). *Confirmation can positively affect users' perceived playfulness.*

Hypothesis 9 (H9). *Confirmation can positively affect users' perceived ease of use.*

Hypothesis 10 (H10). *Media richness can positively affect users' perceived ease of use.*

Hypothesis 11 (H11). *Media richness can positively affect users' perceived usefulness.*

Hypothesis 12 (H12). *Media richness can positively affect users' confirmation.*

3.4. Proposed Theoretical Model

On the basis of the above discussion, in this study, we propose the following model (Figure 2). The model includes 7 constructs and 12 relevant research hypotheses.
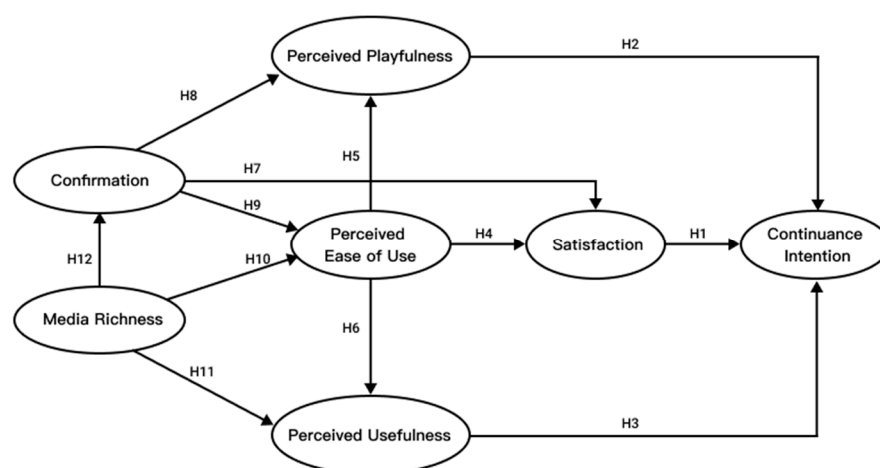

Figure 2. Proposed research model.

4. Data and Methodology

4.1. Stimulus Websites

In this study, we chose a digital museum with free online access for simulation. In 2021, "Wannian Yongbao": Exhibition of Achievements in the Protection of China's Collections on display at the Capital Museum. This exhibition showcases more than 50 pieces of

cultural relics such as porcelain, bronze ware, and traditional clothing through the virtual exhibition hall (Figure 3). It restores the original historical appearance of artifacts, which expands the way of viewing national culture.

Figure 3. Virtual exhibition hall.

4.2. Sample and Data Collection

The measurement indicators of this study were modified according to relevant published research. All items were measured using a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree). The questionnaire items and reference sources are shown in Appendix A. To measure CON, three items from Bhattacherjee [5] were adopted, such as "My experience with using DM was better than what I expected". The MR measurement scales were drawn from the work of Hung and Chen [48], such as "The DM presents information about objects in different formats". PP was assessed based on three items from Moon and Kim [40], the measurement scales for PU from Davis [38], and, for PEOU, from Venkatesh [49]. SAT was examined using the instrument developed by Hsu and Chiu [50], such as "I am satisfied with the performance of DM". Finally, to measure CI, we used four items from Bhattacherjee [5] and Roca et al. [51], such as "I will frequently use the DM to acquire knowledge in the future."

Before issuing questionnaires, first, we conducted a predictive test, and then modified the questionnaire contents according to the feedback. To ensure the authenticity and credibility of the questionnaire, we set the first question as, "Have you completed the experience of visiting the virtual exhibition hall of the museum?" If participants had not used it, they could end the questionnaire early. In the second part, 22 questions were set for seven variables in the model. Finally, the demographic characteristics of the samples were investigated. The samples of this study include cultural enthusiasts, design-related majors, and research scholars. Questionnaires were distributed online and offline from July to August 2021. A total of 287 questionnaires were collected, including 262 effective samples. Among them, 60 data sources were collected from students studying design-related majors; the other 202 data were collected through the network. The basic information of the respondents is shown in Table 1.

Table 1. Demographic information of respondents.

Sample	Category	Number	Percentage
Gender	Male	108	41.2%
	Female	154	58.8%
Age	18–25	145	55.3%
	26–34	84	32.5%
	35–54	28	10.7%
	55–64	5	1.9%
Education	High school	14	5.4%
	Bachelor's degree	145	55.3%
	Master's degree	86	32.8%
	Doctoral degree	17	6.5%
Occupation	Cultural enthusiast	76	29%
	Researcher	52	19.9%
	Student	134	51.1%

4.3. Analysis of Reliability and Convergent Validity

SPSS 26.0 software was used to analyze the reliability of the collected data. Cronbach's α measured the reliability of the questionnaire, as shown in Table 2. The Cronbach's α of each construct was between 0.747 and 0.853, higher than the threshold level of 0.7 [52]. This result shows that the samples have good reliability.

Table 2. Reliability and convergent validity.

Construct	Item	Cronbach α	KMO	Bartlett Sphere Test	Factor Loadings	AVE	CR
CON	CON1				0.790		
	CON2	0.847	0.704	0.000	0.874	0.661	0.853
	CON3				0.764		
MR	MR1				0.749		
	MR2	0.747	0.688	0.000	0.647	0.503	0.750
	MR3				0.719		
PP	PP1				0.752		
	PP2	0.842	0.693	0.000	0.880	0.659	0.852
	PP3				0.796		
PEOU	PEOU1				0.796		
	PEOU2	0.778	0.686	0.000	0.731	0.539	0.778
	PEOU3				0.736		
PU	PU1				0.805		
	PU2	0.782	0.685	0.000	0.747	0.560	0.790
	PU3				0.672		
SAT	SAT1				0.728		
	SAT2	0.792	0.707	0.000	0.769	0.563	0.794
	SAT3				0.757		
CI	CI1				0.778		
	CI2	0.853	0.779	0.000	0.737	0.602	0.858
	CI3				0.838		
	CI4				0.758		

In this study, exploratory factor analysis (EFA) was used to verify the internal consistency of each construct. When the KMO value is greater than 0.5, and the significance of Bartlett's spherical test is less than 0.01, indicating that there is a significant correlation between each construct [53,54]. The result showed that the KMO values of each variable ranged from 0.685 to 0.779, and the significance probability of the Bartlett spherical test was 0.000, which was suitable for further factor analysis.

In addition, a confirmatory factor analysis was performed using AMOS 23.0. If all-composite reliability (CR) values of each construct were greater than 0.7 [55], and the average variance extracted (AVE) values were greater than 0.5 [56], it indicates that the data of this measurement scale has excellent aggregation validity. As shown in Table 2, factor loading, CR value, and AVE value in this study, all meet the requirements. Furthermore, as shown in Table 3, the square roots of all the AVE values are larger than all the correlation coefficients between constructs, which again indicates that the research data has good discriminative validity [56].

Table 3. Correlation matrix and AVE.

Construct	CON	MR	PP	PEOU	PU	SAT	CI
CON	**0.813**						
MR	0.587	**0.709**					
PP	0.541	0.511	**0.812**				
PEOU	0.573	0.610	0.598	**0.734**			
PU	0.544	0.674	0.535	0.645	**0.748**		
SAT	0.598	0.586	0.603	0.698	0.672	**0.750**	
CI	0.573	0.561	0.656	0.614	0.607	0.652	**0.776**

Note: The items on the diagonal on bold represent the square roots of the AVE.

4.4. Model and Hypotheses Testing

The purpose of model fit indices is to measure the degree of conformity between the hypothetical model and the observed data. Using AMOS 23.0 to test the model (Table 4) showed that all the fitting indexes in this study met the standard and warranted a path analysis to test our proposed hypotheses.

Table 4. Main test indicators for model fitting.

Common Indices	CMIN/DF	RMSEA	CFI	NNFI	TLI	IFI	SRMR
Judgment criteria	<3	<0.10	>0.9	>0.9	>0.9	>0.9	<0.1
Value	2.277	0.070	0.924	0.911	0.911	0.925	0.054

The structural model describes the relationships between the different latent variables. Hence, in this second step, we examined the path coefficients to determine the significance of the hypotheses, as shown in Figure 4 and Table 5. The 12 path hypotheses proposed are all significant. As hypotheses, SAT ($p = 0.004 < 0.01$), PP ($p = 0.000 < 0.01$), and PU ($p = 0.024 < 0.05$) have positive effects on CI toward using digital museums. Hence, H1, H2, and H3 are supported. PEOU has a positive influence on SAT ($p = 0.000 < 0.01$), PP ($p = 0.000 < 0.01$), and PU ($p = 0.000 < 0.01$), therefore, H4, H5, and H6 are all verified. CON has a positive effect on SAT ($p = 0.030 < 0.05$), PP ($p = 0.014 < 0.05$), and PEOU ($p = 0.015 < 0.05$), therefore, H7, H8, and H9 are supported. Moreover, MR has a positive influence on PEOU ($p = 0.000 < 0.01$), PU ($p = 0.000 < 0.01$), and CON ($p = 0.000 < 0.01$), therefore, H10, H11, and H12 are confirmed as well.
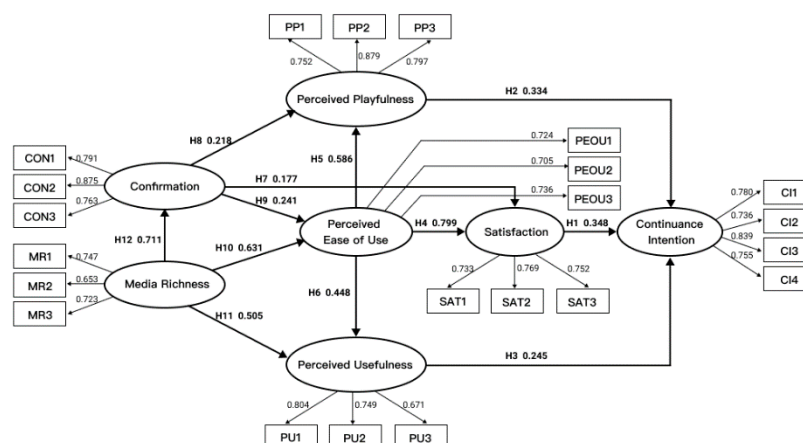
Figure 4. The influence between variables in the structural model.

Table 5. Hypothesis test results.

IV	←	IV	Unstd	S.E.	Unstd./S.E.	*p*-Value	Std.	R^2	Result
CI	←	SAT	0.420	0.145	2.904	0.004	0.348	0.696	H1 is Valid
		PP	0.350	0.084	4.189	0.000	0.334		H2 is Valid
		PU	0.280	0.124	2.259	0.024	0.244		H3 is Valid
SAT	←	PEOU	0.812	0.104	7.781	0.000	0.799	0.865	H4 is Valid
		CON	0.161	0.074	2.174	0.030	0.177		H7 is Valid
PP	←	PEOU	0.685	0.115	5.946	0.000	0.586	0.567	H5 is Valid
		CON	0.229	0.093	2.470	0.014	0.218		H8 is Valid
PEOU	←	CON	0.217	0.089	2.429	0.015	0.241	0.673	H9 is Valid
		MR	0.596	0.107	5.556	0.000	0.631		H10 is Valid
PU	←	PEOU	0.480	0.127	3.779	0.000	0.448	0.818	H6 is Valid
		MR	0.511	0.125	4.085	0.000	0.505		H11 is Valid
CON	←	MR	0.749	0.086	8.703	0.000	0.711	0.506	H12 is Valid

5. Results and Discussion

From the perspective of user experience behavior in the dynamic stage, we use a structural equation to test the constructed model, and the empirical analysis results provide the following findings:

This study confirms that SAT, PP, and PU are essential variables to predict users' CIs effectively, that is to say, an individual's continuance intention using a digital museum is closely related to external motivation and internal motivation factors. On the one hand, online museums create digital resources that need to be accessible to different audiences, from recent visitors interested in learning more about museum collections to academic researchers from foreign universities looking for specific collections. On the other hand, museums encourage the convergence of the two fields of education and entertainment, called "edutainment" [21]. Therefore, we should not underestimate the importance of perceived playfulness in the user experience.

Second, CON and PEOU positively affect users' CIs through the intermediate variable of SAT. It can be seen that users' perceptions of the difficulty of using digital museums is critical in increasing their satisfaction. Online museums remove old barriers to information access (such as space and time restrictions) [27]. In addition, they provide easy-to-understand system operations, clear exhibition guidance, and convenient navigation, which can help users browse online more efficiently, thereby, enhancing their satisfaction.

Third, the results show that if users' initial expectations are fully satisfied during their experiences of digital museums, users' PEOU and PP will be enhanced. Specifically, the

more a digital museum can meet users' expectations, the higher the degree to which users perceive that the system can achieve convenient reading, efficient access to resources, and improved learning efficiency. In addition, as digital museums belong to an emerging field, most users are more with curiosity psychology. Therefore, users' explorations in the virtual environment can better meet users' expectations. More importantly, the implementation of VR tours is closely related to improved entertainment and usability of digital museums [24]. This novel interaction mode is conducive to the satisfaction of users' expectations.

Furthermore, our findings confirm that the effectiveness of ontology, such as rich media, can increase users' PEOU and PU and become an essential factor in meeting users' CON. A system that provides good media richness is helpful and easy to use, supporting information requirements and enhancing information accessibility. Furthermore, a communication channel with a high degree of media richness can effectively avoid misunderstanding information by the message receiver. In this process, users' experiences will meet or exceed their expectations, thus, achieving higher satisfaction.

6. Conclusions and Suggestions

6.1. Academic Value

User experience does not just depend on the functional characteristics of information technology; positive experience will affect users' intentions and adoption of technology. Nowadays, online museums have undergone a paradigm shift from "object-centeredness" to visitor experience. Therefore, it is necessary to conduct a comprehensive investigation from the perspective of user experience. Unlike a traditional museum, the primary purpose of a digital museum is to educate and inspire users to improve their understanding of interesting artifacts. The media richness theory confirms that it can effectively help learners understand more complex subjects through research findings. The main contribution of this study is to extend existing TAM and ECM models to understand better how to increase digital museum adoption from a personal rather than a technical perspective.

Our study verifies the rationality of each index of the structural model of user experience evaluation for digital museums, which will provide some valuable theoretical guidance for museum curators and website designers. First, we provide an effective way to evaluate whether digital museums meet visitors' expectations. These expectations can be addressed through the usability, ease of use, and emotional cognition assessed in our study. Museum professionals can learn about specific characteristics that might influence online museum users' visits, thereby, stimulating their intentions. That is particularly important during the COVID-19 pandemic [31]. Indeed, digital museums offer an alternative for people who might be interested in museum content but are unable to visit. In addition, our results may encourage museum web designers to improve the usability and appearance of their online interfaces. Digital museums make effective use of the Internet and use multimedia, emotional content, and aesthetic interfaces, with the ultimate aim of attracting more visitors and arousing their interest in museums and visiting environments in the cultural field. In the digital information age, museums shoulder the social mission of promoting historical civilization and cultural heritage protection to the public.

6.2. Practical Value

On the basis of the above discussion, we put forward three practical suggestions for the system construction of digital museums that focus on user requirements and experience.

First, we provide an effective method to evaluate whether digital museum websites meet visitor expectations. Faced with the complex and diverse Internet environment, digital museums need to create intuitive and easy-to-use interactive designs to improve users' experiences. Academic researchers are more concerned about the Web page's functional ease of use and Interface simplicity, and they also have high requirements for fast, accurate, and convenient information access. Therefore, digital museums should organize information reasonably. Through a flat information structure, users can obtain all complete information without multiple operations. In addition, the following measures

help users navigate the site better, such as optimizing the design of the map guide and providing directional thumbnails of the venues, which will allow users to find helpful information quickly.

Secondly, to meet users' cognitive needs, digital museums must strengthen the construction of information content, which will attract audiences and social attention with cultural qualities. Museum websites provide information resources that play an essential role in daily life, and online visitors have precise needs and expectations when using digital museum resources [27,57]. For example, researchers in specialized fields want to learn more about cultural relics to promote their study and research tasks. On the other hand, cultural enthusiasts prefer to learn about traditional knowledge in a more relaxed and entertaining way to fulfill their interests and satisfy their inner desire. Therefore, digital museums should provide users with differentiated exhibition services according to their information reception characteristics and aesthetic habits, which will avoid them giving up the use of such resources due to changes in their living or learning environment.

Furthermore, our results may encourage museum web designers to improve the usability and appearance of online interfaces. As an information dissemination system, the ultimate goal of digital museums is to maximize the transmission of information to the public. If digital museums adopt other rich elements, such as multimedia, three-dimensional models, they will better show cultural relics' form and information. However, it should not be ignored that people will feel tired when they actively operate in a similar information presentation environment for a long time, resulting in a loss of concentration and a decline in perceptual ability. Therefore, multi-dimensional human–computer interaction means (such as virtual reality technology) are significant. This technology will help digital museum users simulate the actual visit process, thus, enhancing the users' experiences.

6.3. Limitations and Future Research

Although this study has made some valuable conclusions, some limitations still create a way for future research. First of all, the samples of the empirical research are mainly from college students, which may lead to the limitation of sample coverage. In further research, expanding the scope of respondents will help build a better universality of the influencing factor model for digital museum users' continuance intentions. Secondly, user experience is a complex process. However, in this study, we only consider partial user and system characteristics in the stage of user expectation. In the future, more measurement indexes can be introduced to enrich the content of the model. Third, our research selected one specific type of digital museum. Other types of digital museums (such as garment museum or art galleries websites) may play different roles in terms of design characteristics, but they share certain interface aesthetics and system settings in common. This research model may be applicable to explore user experience in other cultural heritage fields, which needs further confirmation.

Appendix A

Table A1. Measurement Model and Sources.

Construct	Indicator	Description	References
Confirmation (CON)	CON1	My experience with using the digital museum (DM) was better than what I expected.	Bhattacherjee [5]
	CON2	The service level or system quality provided by the DM was better than what I expected.	
	CON3	Overall, most of my expectations from using the DM were confirmed.	
Media richness (MR)	MR1	The DM can provide me instant feedback upon my requests.	Hung and Chen [48]
	MR2	The DM presents information about objects in different formats (e.g., text, picture, video, audio, animation, and 3D virtual environment).	
	MR3	The DM provides accurate information in pictures, texts, and numbers.	
Perceived playfulness (PP)	PP1	When interacting with the DM, I do not realize the time elapsed.	Moon and Kim [40]
	PP2	When interacting with the DM, I am not aware of any noise.	
	PP3	When interacting with the DM, I often forget the work I must do.	
Perceived ease of use (PEOU)	PEOU1	My interaction with the DM is clear and understandable.	Venkatesh [49]
	PEOU2	Interacting with the DM does not require a lot of my mental effort.	
	PEOU3	I find it easy to get the DM to do what I want it to do.	
Perceived usefulness (PU)	PU1	Using the DM improves my academic or research performance.	Davis [38]
	PU2	Using the DM improves the efficiency of my access to resources.	
	PU3	Using the DM can get what I want knowledge or information.	
Satisfaction (SAT)	SAT1	I am satisfied with the performance of the DM.	Hsu and Chiu [50]
	SAT2	I am pleased with the experience of using the DM.	
	SAT3	My decision to use the DM was a wise one.	
Continuance Intention (CI)	CI1	I intend to continue using DMs rather than discontinue their use.	Bhattacherjee [5] Roca et al. [51]
	CI2	My intentions are to continue using DMs rather than use any alternative means.	
	CI3	I will frequently use DMs to acquire knowledge in the future	
	CI4	I intend to increase my use of DMs to acquire knowledge in the future.	

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