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# A STUDY OF FACTORS INFLUENCING USER ACCEPTANCE OF DIGITAL TRANSFORMATION IN TEXTILE AND CLOTHING UNIVERSITY MUSEUMS

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## ABSTRACT
Digital transformation and technological innovation have had a far-reaching impact on various industries. The development trend of China's cultural and museum industry, some large museums carried out digital transformation as early as in the 1980s. However, for small and medium-sized museums such as university textile and clothing museums, as an important place for the inheritance and education of clothing culture, they are also facing the pressure and opportunity of digital transformation. This research adopts a quantitative research method to conduct a questionnaire survey on 615 students majoring in clothing-related disciplines in 13 universities in China that have textile and clothing university museums, The research adopts two software, SPSS and AMOS, to analyse the data from the questionnaire survey, and constructs a model of the factors influencing the acceptance of the users of the digital transformation of the textile and clothing university museums by takingthe extending of Unified Theory of Acceptance and Use of Technology (UTAUT2) model as the theoretical framework, The hypothesis model was empirically analysed.Eventually, it was found that Performance Expectancy(PE), Effort Expectancy(EE), Social Influence(SI), and Hedonic Motivation(HM) all have a significant effect on the user acceptance of digital transformation of the Textile and Clothing University Museum, which provides some reference and guidance for the digital transformation path of the Textile and Clothing University Museum.

***Keywords: Museum，Digital transformation，Acceptance，User experience***

## 1. INTRODUCTION

Today's world has entered the digital era, and digital transformation has led to fundamental changes in the mode of operation of organisations and the way they deliver value to users, laying the foundation for museums to achieve sustainable development (Liao,2023). The digital transformation of museums is based on cloud computing, Artificial Intelligence (AI), Fifth-generation(5G), blockchain, Internet of Things, big data and other digital technologies, and the integration and innovation of the museum collection and storage, cultural relics protection, exhibition construction, social education and other businesses, and then to seek a new management mode, operation mode and service mode, in order to improve the efficiency of the management and operation, reduce the cost of operation and maintenance, and enhance the

audience's experience, etc., so that the museums can make the interpretation of value, content construction, innovation transformation and other aspects of the museum to obtain greater development capacity and advantages, to achieve the overall development of quality and efficiency (Shen, 2022).Some of China's large-scale comprehensive museums began the exploration of digital transformation as early as the 1980s, and after more than a decade of transformation practice, coupled with the acceleration of the three-year Covid-19, the external environment, technological maturity, and the accumulation of experience have made the digital transformation both a general trend and an imminent one (Liao, 2023).

Data from the third survey of the International Council of Museums (ICOM) in May 2021 show that museums' digital strategies are not ad hoc responses to the impact of the Covid-19, but rather a strategic vision and long-term commitment based on the experience of museums in practice and the characteristics of the times(International Council of Museums,2021). Museums in various countries are also actively responding and deploying strategic development routes for the digital transformation of museums. The Three-Year Action Plan for the High-Quality Development of Museums with the Help of the Chinese Museums Association (2022-2025) of 27 September 2022 mentions the promotion of scientific and technological innovations in museums, the development of online digital experience products, and the provision of new types of cultural and tourism services such as immersive experiences, virtual exhibition halls, high-definition live broadcasting and other new cultural tourism services (Chinese Museums Association, 2022); The American Alliance of Museums also proposes to "develop a comprehensive digital strategy" in its 2022-2025 strategic framework(American Alliance of Museums 2022–2025 STRATEGIC FRAMEWORK,2021); The Metropolitan Museum of Art has a 70-strong digital team that promotes the museum's practice of digital innovation and manages the museum's digital media department to enhance the overall digital services and accelerate digitization(The Metropolitan Museum of Art,2017).

The way of thinking and behaviour of the public has changed in the digital era, user needs appear more diversified, personalised and contemporary in the digital era, and the audience's expectations, visiting habits and usage behaviours have also changed profoundly (Liao,2023). Contemporary college students, as a generation growing up with the network environment, the development and application of various new technologies and new media have changed their cognitive ways and observation perspectives, and making full use of and using new technologies when available is the basic support to promote and enhance the level of museum construction (Chen et al., 2023). The traditional museum exhibition, operation and cultural dissemination methods have been unable to adapt to the strategic requirements of the new environment in the digital era, digital preservation of the physical museum collection resources, "collection information", "virtual display", The combination of "collection information", "virtual display", "information education" and "user experience" will become an inevitable road for the sustainable development of museum culture (Li, 2021). Museums have already shifted from being collection-centred to being user-centred and centred on human participation and interaction (Cristian & Simona, 2022), and it is no longer just a venue for collecting artefact collections, but

also a place for collecting and sharing human experiences (Xu, 2023). Whether it is the international strategic orientation, the addition of technology, the need of museums' own development or the change of users' needs, digital transformation will become a major trend in the reform and development of museums (Shen, 2022).

Most of the textile and clothing university museums rely on their own high-quality clothing professional schooling characteristics, aiming to serve the community, providing specialised resources for clothing professional teaching and research, actively carrying out clothing culture, modern design teaching, scientific research and academic exchanges while collecting and protecting the heritage related to clothing culture, the research and dissemination of clothing culture (Shen,2022), as well as being a demonstration of teaching for teachers of the relevant professions, It is also a good communication platform for students to observe and provide intellectual support for the construction of textile and clothing disciplines and the training of professional talents in colleges and universities (Shen,2022).

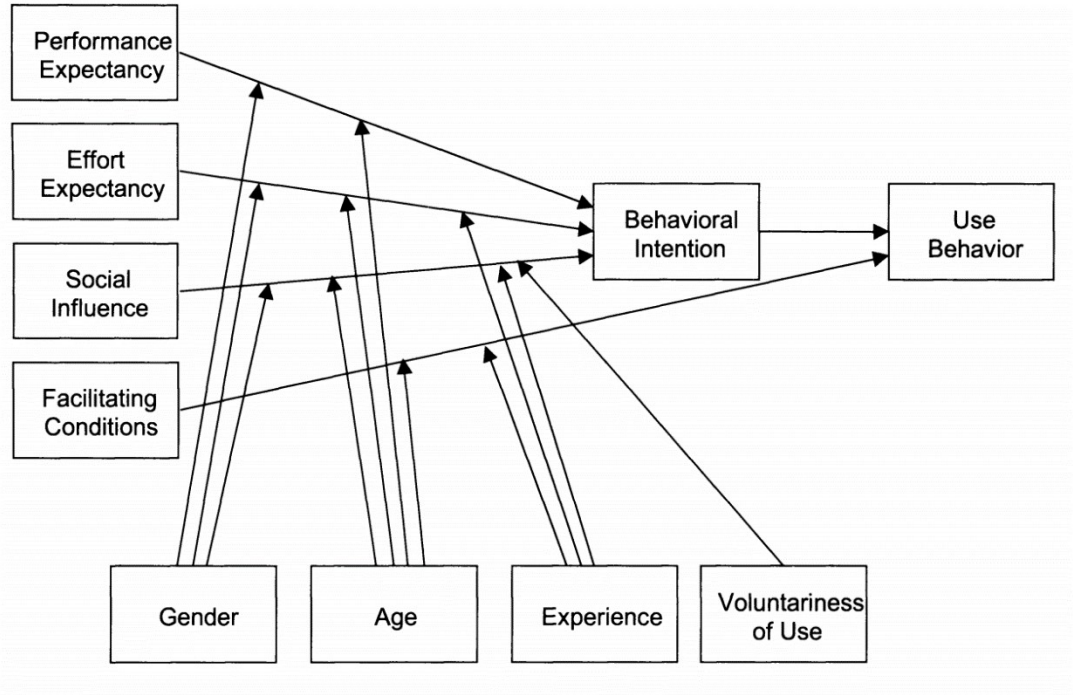
China's existing textile and clothing museums in colleges and universities, a total of 13, compared to China's 202 colleges and universities with clothing majors, actually reflects the lack of construction, and the distribution is extremely uneven and so on, has been opened and the development of a better college textile and clothing museums are mostly concentrated in the clothing majors of the discipline of the stronger advantages of the more economically developed regions(Chen,2019). Most of the textile and clothing university museums have basically established independent websites and WeChat public numbers, and have set up unique digital collection display libraries, but most of them are relatively isolated information technology systems, and have not achieved the interconnection of museum databases(Shen, 2022). Most of the textile and clothing university museums in the digital transformation of the information resources are not rich, the quality of information is not high, the digital innovation consciousness is not strong, the sense of digital experience is not good, the digital means of communication is single, the digital experience is not enough and insufficient supply of funds and so on many problems, resulting in the overall digital transformation of the path of the slower, not able to meet the diversified use of college students nowadays demand(Zhou, 2021). This study takes the user group of college students majoring in textile and clothing as the object of investigation, studies the analysis of factors affecting the acceptance of digital transformation of textile and clothing university museums, constructs organisational restructuring, business reshaping, and process reengineering with the core of serving users' needs, builds a conceptual framework to find the constraints of relevant influencing factors with data, and considers how to improve the dissemination of traditional clothing culture and diversified educational effects through digital technology , creating innovative experiences and services that adapt to the times and enrich user needs (Liao,2023).

## 2. LITERATURE REVIEW

The Unified Theory of Acceptance and Use of Technology (UTAUT) was initially proposed as an integrated theory by scholars Venkatesh and Morris et al. after integrating eight related theories and models such as the Technology Adoption Model (TAM), Theory of Reasoned

Action (TRA), Motivation Model (MM), Theory of Planned Behaviour (TPB), etc., and in recent years, along with the classical Technology Acceptance Model (TAM), it has been widely used to measure the factors influencing users' willingness to accept new technologies or products (Venkatesh et al.,2003). The theoretical framework proposes four core variables, namely Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC), and four moderators, namely age, gender, experience and voluntariness (Venkatesh et al, 2003), and the theoretical framework (see Figure 1). PE is a concept similar to perceived usefulness in the TAM model, which refers to the extent to which an individual believes that using a system will lead to improved performance; EE is the work that an individual puts into using a system, a concept similar to perceived ease of use in the TAM model; SI is a measure of social influence and refers to the extent to which the social environment influences an individual's use of a system, such as subjective norms in TAM; FC is the extent of the perceptual infrastructure associated with the use of the system and can also be translated as a "contribution factor.". It is similar to the TRA model of perceptual behaviour control. Its coverage is wider and generally better than the original theoretical model, and from the point of view of research practice, it is also a more mature model for analysing users' acceptance of new technologies or products(Venkatesh et al.,2003), especially in the field of user acceptance and willingness to be widely used in the field of research.

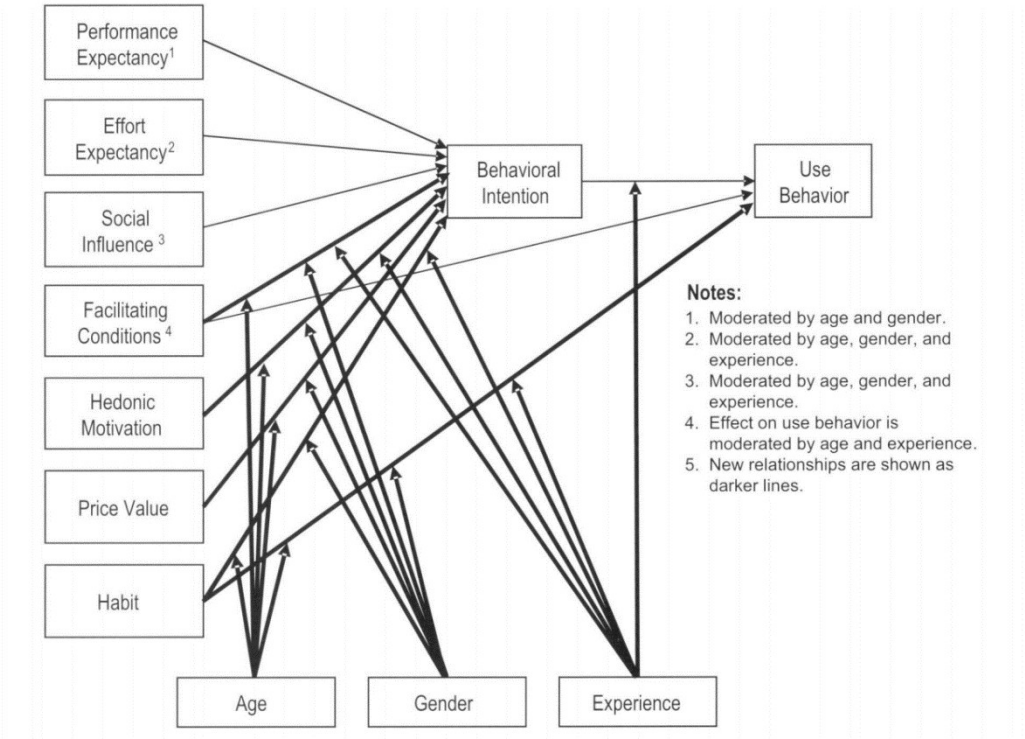
**Figure 1:Unified Theory of Acceptance and Use of Technology (UTAUT)**




Source: Venkatesh et al.(2003).

In 2012, Venkatesh et al. added Hedonic Motivation (HM), Price-Value (PV), and Habit (HT) variables to UTAUT, and excluded voluntary moderating variables to form the UTAUT2 model (Venkatesh et al., 2012), and the model framework is shown in (see Figure2).

*Figure* ***Error! No text of specified style in document.****:Unified Theory of Acceptance and Use of Technology2（UTAUT2）*

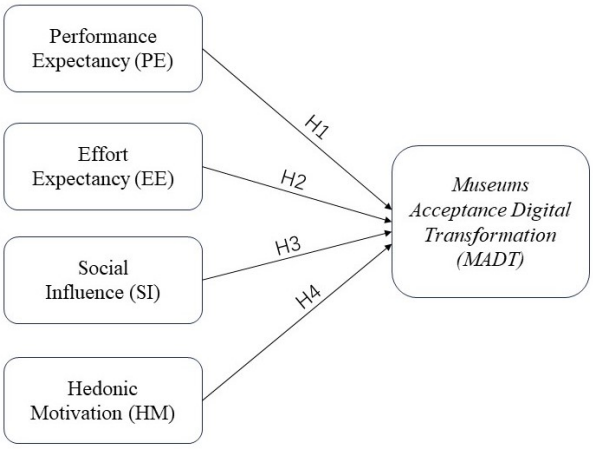



Source: Venkatesh et al. (2012).

This study chooses UTAUT2 as the conceptual framework to analyse the factors affecting the acceptance of university students' willingness to accept the digital transformation of the Textile and Clothing University Museum, the primary consideration is the user's adoption in the initial stage, coupled with the fact that the Textile and Clothing University Museum, as an organisation that carries the functions of cultural heritage of clothing, providing social services, and playing the function of disciplinary education for people, is tasked with the teaching, scientific research, and social services. As a free public institution with the mission of teaching, scientific research, and social service, and the user group mainly focuses on the teachers and students of the university as well as the exchange of related professional studies, the variables of convenience (PC), value price (PV), and usage habits (HT) are not taken as the dependent variables of the study, and the object of the study mainly focuses on the university students, with the differences in gender, age, and experience being relatively small. moderating variables were not included in the overall research framework.

According to the adjustment of the UTAUT2 model, a model of the factors influencing the digital transformation user acceptance of the Textile and Clothing University Museum, which contains four core variables such as PE, EE, SI, and HM, was constructed, as shown in (see Figure 3).

*Figure 3:Conceptual Framework*




Source: Developed by the Author

## 3.RESEARCH HYPOTHESES

### 3.1Impact of Performance Expectancy (PE) on User Acceptance of Digital Transformation in Textile and Clothing University Museums

PE refers to the users' desire to make many positive changes and achieve more benefits in their daily life, work and learning when using a technology or product(Venkatesh et al., 2003). Yun (2023) found that if users perceived that the various services and knowledge of smart museums could facilitate their learning and research more effectively, and that access to information was more concise, efficient, and convenient than the original way of accessing and using them, the willingness to use them would increase dramatically. He&Gu (2022) mentioned that new technologies provide new possibilities for museum visitors such as mobile learning, ubiquitous learning, and so on, which facilitates learners' exploration and discovery in museums. Therefore, users may use new museum technologies based on the motivation of enhancing the efficiency of visiting and learning.Gek-Siang et al (2021) found that PE also has a significant positive effect on Behavioural Intention to Use (BIU) when the experience of using it is good and suggested that the People's Museum of Malacca Augmented-Reality(AR) mobile app should be available in multiple languages to provide users with provide accurate, adequate and updated information to meet the needs of museum visitors from different countries.

The PE in this study refers to the value recognition of the digital transformation of museums, which means that the users will have a pleasant exhibition experience and interactive communication after being exposed to the relevant technology applications brought by the digital transformation of museums, which will have an effect on their work, study and life. Based on the above analysis, this study proposes the following hypotheses:

**H1: There is a positive correlation between PE and user acceptance of digital transformation in textile and clothing university museums.**

### 3.2 Impact of Effort Expectancy(EE) on User Acceptance of Digital Transformation in Textile and Clothing University Museums

EE is how much and to what extent users need to exert effort in using a technology or service (Venkatesh et al., 2003).He&Gu (2022) found that the willingness to use technologies in the category of museum experience is also subject to EE, i.e., the threshold of use of these new technologies with immersive effects largely shapes their popularity. Yang at al. (2021) In the process of visiting a science museum, the amount of effort exerted greatly affects whether the museum audience chooses to visit or experience an intelligent interactive exhibition.Gek-Siang et al (2021) found that EE also has a significant positive effect on Behavioural Intention to Use (BIU) and mentioned that museums should place clear, multilingual user manuals so that museum visitors can easily access, learn and become proficient in using AR mobile apps.Based on the above analyses, the following hypotheses were formulated for this study:

**H2: There is a positive correlation between EE and user acceptance of digital transformation in textile and clothing university museums.**

### 3.3 Impact of Social Influence(SI) on User Acceptance of Digital Transformation in Textile and Clothing University Museums

SI generally refers to the extent to which the social environment in which an individual lives affects the individual's behaviour and intentions (Venkatesh et al, 2003). He&Gu (2022) argue that people going to museums to use new technologies may be influenced by friends, family or other visitors, and that new museum technologies with social features allow visitors to feel connected to each other, as well as garnering more future users. Zollo et al (2022) found that marketing initiatives on social media platforms were significant predictors of users' continued willingness to embrace museums and positively influenced visitors' realisation of financial support through the purchase of relevant products and souvenirs from museum shops. Wu et al (2022) mentioned that when users can get useful information to help them with their learning tasks in a digital clothing museum, they find the system more beneficial than other ways and recommend it to people around them, thus building stronger and more lasting relationships. Shephard &Pookulangara (2020) found that the use of social media can help college students use digital collections more, and that the key to getting students to use the university's digital collections is to increase the exposure of the digital collections through the promotion of the collections by faculty and collection staff, and suggests that the digital collections be incorporated into classroom teaching sessions whenever possible. Based on the above analyses, the following hypotheses were formulated for this study:

**H3: There is a positive correlation between SI and user acceptance of digital transformation in textile and clothing university museums.**

### 3.4 Impact of Hedonic Motivation(HM) on User Acceptance of Digital Transformation in Textile and Clothing University Museums

HM refers to the enjoyment and pleasure that the user feels when using that new technology is interesting and fun (Venkatesh et al., 2012). Wu et al (2022) found that perceived playfulness (PP) is an important factor influencing the willingnesss to use digital clothing museums, which have become a "knowledge and leisure entity" that encourages the integration of the two

domains of education and entertainment, referred to as "teaching and playing" (Pallud& Straub, 2014). He & Gu (2022) showed that in the museum domain, users' HM are effective in predicting willingness to use new technologies with the goal of interaction (Rauscher &Humpe, 2022), and suggested that when museums provide new technologies and related services, the gamification qualities of them should be enhanced (Siang et al, 2019).Gek-Siang et al (2021) found that the playfulness dimension is the most important factor in determining user acceptance in museums. Developers of AR mobile apps for the People's Museum of Melaka should focus on designing a more enjoyable and engaging user experience by adding reward-based gamification features.Based on the above analyses, the following hypotheses were formulated for this study:

**H4: There is a positive correlation between HM and user acceptance of digital transformation in textile and clothing university museums.**

## 4. RESEARCH METHODOLOGY

Ana (2021) mentioned that quantitative research is a method of testing objective theories by observing the relationship between variables. In this study, a quantitative research method was used to explore the factors of variables related to the acceptance of digital transformation of museums by college students majoring in textile and clothing in 13 universities across China.

The questionnaire development was based on the mature scale structure of Venkatesh and Davis (2003), with reference to the scales of Yun (2023),He&Gu (2022), Yang at al. (2021) andGek-Siang et al. (2021), and combined with the characteristics of college student groups and the Museum digital transformation related technology application to modify and improve the scale, to form a user research scale that is more in line with the acceptance willingness of museum digital transformation. Through the questionnaire survey, a five-point Likert scale was used to measure the acceptance of the digital transformation of museums by college students, and the answers were set to five dimensions, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree to ensure the quantifiability of the data and the accuracy of the analyses.

The sample size of this study comes from 615 college students majoring in clothing-related disciplines from 13 universities and colleges across the country that have textile and clothing university museums, and the questionnaire link was distributed to the students through random sampling, using a two-month period to achieve the final questionnaire collection and return. A total of 653 samples were collected in this study, and according to the data generated in the background, excluding the data of users whose answer time to this questionnaire was too short (the total answer time was less than one minute), a total of 615 valid questionnaires were received as the research object of this empirical study, and their descriptive statistics were analysed as shown in Table 1.

**Table 1: Descriptive analysis of demographics**

| Form | Options | Frequency | Percent(%) |
|---|---|---|---|
| Gender | Male | 166 | 27.0 |

| | | | |
|---|---|---|---|
| | Female | 449 | 73.0 |
| Age | Under 19 | 103 | 16.7 |
| | 20-24 | 452 | 73.5 |
| | 25-29 | 39 | 6.3 |
| | Over 30 | 21 | 3.4 |
| Nation | Han ethnic group | 600 | 97.6 |
| | Other ethnic groups | 15 | 2.4 |
| Education level | Ploytechnic | 5 | 0.8 |
| | Degree | 592 | 96.3 |
| | Master | 16 | 2.6 |
| | PHD | 2 | 0.3 |
| Grade | Grade 1 | 70 | 11.4 |
| | Grade 2 | 262 | 42.6 |
| | Grade 3 | 205 | 33.3 |
| | Grade 4 | 78 | 12.7 |
| Major | Fashion Design and Engineering | 138 | 22.4 |
| | Fashion and apparel design | 138 | 22.4 |
| | Apparel Product Design | 109 | 17.7 |
| | Apparel Materials and Engineering | 102 | 16.6 |
| | Textile materials | 115 | 18.7 |
| | Other specialities | 13 | 2.1 |
| City | First-tier city | 120 | 19.5 |
| | New first-tier city | 242 | 39.3 |
| | Second-tier city | 175 | 28.5 |
| | Other cities | 78 | 12.7 |
| Digital Exploration | Yes | 398 | 64.7 |
| | No | 217 | 35.3 |
| Frequency of visits to physical museums | 1-3 times | 403 | 65.5 |
| | 4-6 times | 195 | 31.7 |
| | 7-9 times | 11 | 1.8 |
| | More than 10 times | 6 | 1.0 |
| Frequency of use of digital museums | 1-3 times | 113 | 18.4 |
| | 4-6 times | 184 | 29.9 |
| | 7-9 times | 201 | 32.7 |
| | More than 10 times | 117 | 19.0 |

Source: Author

The 615 samples contained 166 male and 449 female respondents, 97.6% of whom were predominantly Han Chinese.19.5% of the students came from first-tier cities, 39.3% from new first-tier cities, 28.5% from second-tier cities, and 12.7% from other cities. A total of students from a number of textile and apparel-related majors, including apparel design and engineering, clothing and apparel design, and textile materials, were covered. It is worth noting that 73.5% of the participants were between the ages of 20 and 24, and used the digital resources of the textile and apparel university museums in their own schools and other institutions significantly more often than visited the physical museums. Most of them obtain information related to museum digitisation through self-media platforms, advertising media campaigns and teachers; and they have come into contact with new technological applications such as online reservation services, self-service audio guides and multimedia interactive installations; they hope to obtain some information related to their own majors, information for expanding their knowledge as well as information of their own interest through the digital transformation of the museums. Through the relevant data analysis, it is found that the current stage of college students are not unfamiliar with the application of digital technology, and there is no doubt about the demand of college students for digital resources, and the Museum of Textile and Clothing University has to comply with the requirements of the development of the times to carry out a deeper level of digital transformation.

## 5. RESULTS

### 5.1 Exploratory Factor Analysis

To further improve and effectively analyze the structural validity of the questionnaire, it is necessary to conduct exploratory factor analysis. The KMO value (Kaiser Meyer Olkin) and Bartlett's sphericity test results of this study showed KMO=0.949 (Table 2), indicating that the sample is suitable for factor analysis; The Bartlett's sphericity test results were significant (Sig.=0.000, $p<0.01$), indicating the presence of common factors among the correlation matrices of each factor. The sample size of the survey questionnaire in this study is suitable for conducting factor analysis.

**Table 2: KMO and Bartlett's Test**

| **KMO and Bartlett's Test** | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.949 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 12481.423 |
| | df | 595 |
| | Sig. | 0 |

Source: Author

By referring to previous studies (Hair, 2019), the factors with eigenvalues greater than 0.5 were extracted using principal component analysis by selecting the maximum variance method with orthogonal rotation. This study finally obtained a dimensional structure consisting of 35 test

items and five factors, as shown in Table 3, all measurement items can be seen by rotating the component matrix, there is no cross-factor situation of a particular topic in different dimensions, the factor loadings are above 0.500, and the cumulative explained variance of the five factors is 62.982%, which is over the threshold of 60.000% (Wu, 2009) .

The results of the reliability test in this study show (Table3) that the Cronbach's alpha values for the five factors PE, EE, SI, HM, and MADT are 0.901, 0.873, 0.875, 0.929, and 0.910, respectively, and all of these values are greater than 0.7, which suggests that there is a high degree of internal consistency (Hair et al., 1998). The question total correlation analysis was also conducted, and it can be seen that the lowest PE is 0.695, the lowest value of EE is 0.605, the lowest value of SI is 0.594, the lowest value of HM is 0.700, and the lowest value of MADT is 0.637. Based on the above results, it can be seen that the CITC value of each variable is greater than 0.5, and that the scale's reliability is high, and the dimensional structure is Relatively stable.

**Table 3: Exploratory Factor Analysis & Reliability**

| Factor | Item | Loadings | CITC | Total | % of Variance | Cumulative % | Cronbach's α |
|---|---|---|---|---|---|---|---|
| Museums Acceptance Digital Transformation (MADT) | MADT1 | 0.666 | 0.637 | 4.914 | 14.039 | 14.039 | 0.910 |
| | MADT2 | 0.705 | 0.705 | | | | |
| | MADT3 | 0.727 | 0.717 | | | | |
| | MADT4 | 0.732 | 0.753 | | | | |
| | MADT5 | 0.732 | 0.726 | | | | |
| | MADT6 | 0.729 | 0.741 | | | | |
| | MADT7 | 0.700 | 0.685 | | | | |
| | MADT8 | 0.715 | 0.696 | | | | |
| Hedonic Motivation (HM) | HM1 | 0.754 | 0.734 | 4.736 | 13.532 | 27.571 | 0.929 |
| | HM2 | 0.794 | 0.816 | | | | |
| | HM3 | 0.773 | 0.826 | | | | |
| | HM4 | 0.740 | 0.779 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | HM5 | 27 | 0.7 | 0.762 | | | | |
| | HM6 | 27 | 0.7 | 0.700 | | | | |
| | HM7 | 84 | 0.7 | 0.800 | | | | |
| | PE1 | 55 | 0.7 | 0.715 | | | | |
| | PE2 | 31 | 0.7 | 0.693 | | | | |
| Performance Expectancy (PE) | PE3 | 65 | 0.7 | 0.701 | 4 | 12.812 | 40.383 | 0.901 |
| | PE4 | 34 | 0.7 | 0.674 | .484 | | | |
| | PE5 | 91 | 0.7 | 0.761 | | | | |
| | PE6 | 60 | 0.7 | 0.720 | | | | |
| | PE7 | 47 | 0.7 | 0.695 | | | | |
| | EE1 | 75 | 0.6 | 0.605 | | | | |
| | EE2 | 92 | 0.6 | 0.620 | | | | |
| | EE3 | 46 | 0.7 | 0.672 | | | | |
| Effort Expectancy (EE) | EE4 | 25 | 0.7 | 0.658 | 4 .141 | 11.832 | 52.215 | 0.873 |
| | EE5 | 45 | 0.7 | 0.683 | | | | |
| | EE6 | 61 | 0.7 | 0.704 | | | | |
| | EE7 | 21 | 0.7 | 0.645 | | | | |
| | SI1 | 64 | 0.7 | 0.711 | | | | |
| Social Influence (SI) | SI2 | 44 | 0.7 | 0.662 | 3 .768 | 10.767 | 62.982 | 0.875 |
| | SI3 | 51 | 0.6 | 0.594 | | | | |

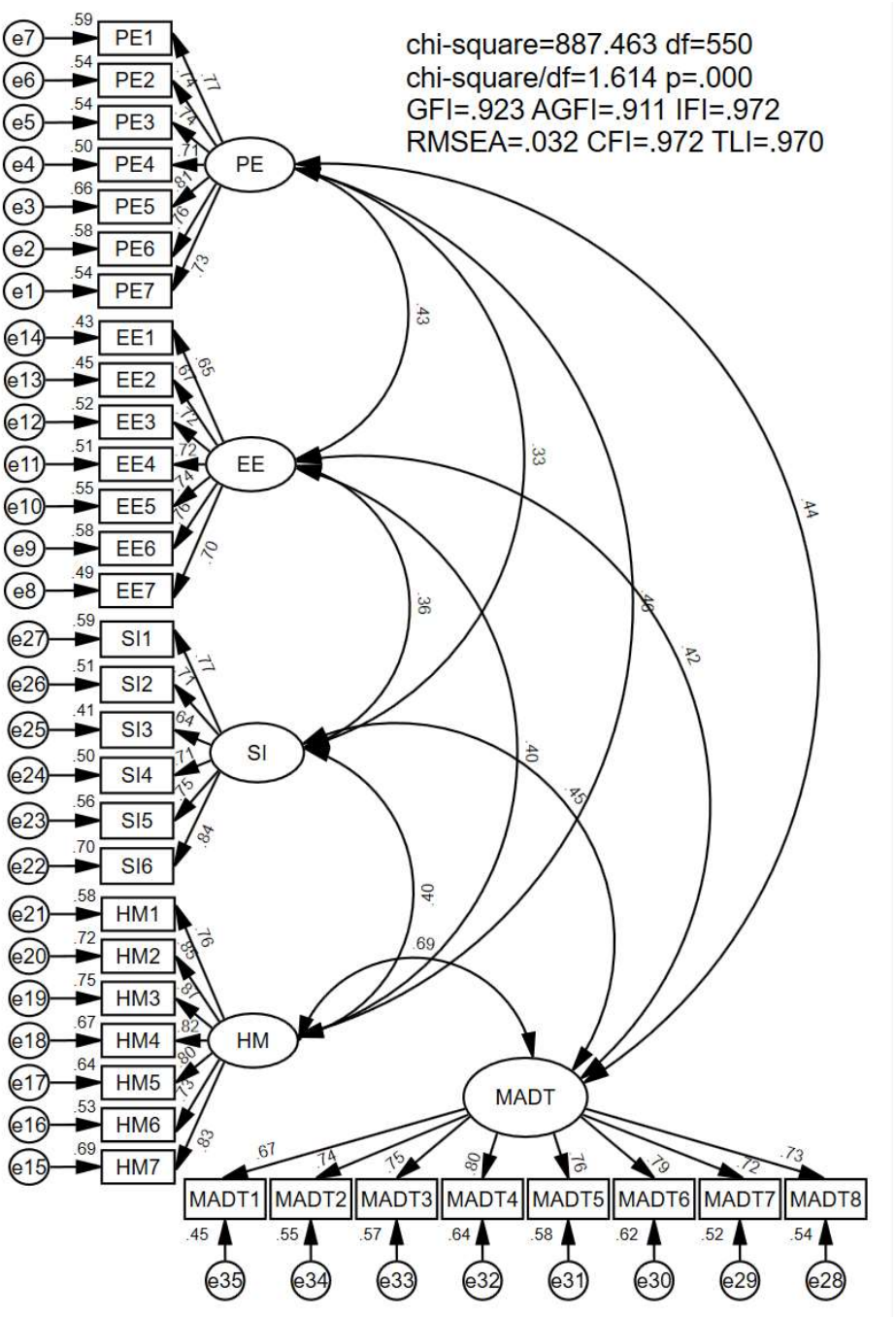
| | | | |
|---|---|---|---|
| | SI | 0.7 | 0 |
| 4 | 32 | .639 | |
| | SI | 0.7 | 0 |
| 5 | 86 | .700 | |
| | SI | 0.8 | 0 |
| 6 | 18 | .768 | |

Source: Author

**5.2 Confirmatory Factor Analysis**

In this study, AMOS software was used to conduct validation factor analysis through structural equation modelling. The model fitting indicators were used to judge the model fitting effect and to test the ability of the model obtained from exploratory factor analysis to fit the actual observed data, as shown in Figure 4.

**Figure 4: Measurement Model**




Source: Author

Judging by the fitting metrics and criteria shown in Figure 4, it can be found that all the results of the model fit meet the fitting criteria and the model fit is good. The measurement validation procedure of confirmatory factor analysis (CFA) recommended by Anderson and Gerbing (1988) was used in this study. Figure 4 shows that the CFA results were satisfactory with Chi=887.463, df=550; Root Mean Square Error of Approximation (RMSEA) of 0.032, CFI

of 0.960; GFI of 0.932; and CMIN of 1.614, which is lower than the recommended level3 (Hair et al, 2010).

Next, the reliability and validity of the scales were assessed, including combinatorial reliability, convergent validity tests, and discriminant validity. It is generally accepted that when the combined reliability is greater than 0.700, it indicates that the sample data have good combined reliability (Bagozzi et al, 1992). As shown in Table 4, the combined reliabilities of the five factors ranged from 0.876 to 0.929, which all exceeded the threshold of 0.700, indicating that the scale has a robust reliability. Regarding convergent validity, the general discriminating criteria are as follows: standardised factor loading exceeds 0.500, (Bailey et al, 2006); average variance extracted (AVE) is greater than 0.500 (Fornell et al, 1981); and combined reliability (CR) exceeds 0.700 (Bagozzi et al, 1995). Satisfying the above conditions indicates good convergent validity.

The results of the validation factor analysis are shown in Table 4, the standardised factor loadings of the five measures of PE, EE, SI, HM, and MADT are all greater than 0.7, with component reliabilities (CR) of 0.901, 0.876, 0.877, 0.929, and 0.910, respectively, and average variance extracted (AVE) values of more than 0.500, respectively, of 0.567, 0.503, 0.544, 0.652, and 0.558.In summary, the scale has good convergent validity.

**Table 4: Validity& Reliability statistics**

| Factor | Item | Unstd. | S.E. | z | P | Std. | CR | AVE |
|---|---|---|---|---|---|---|---|---|
| PE | PE7 | 1 | | | | 0.735 | 0.901 | 0.567 |
| | PE6 | 0.95 | 0.051 | 18.567 | *** | 0.764 | | |
| | PE5 | 0.991 | 0.05 | 19.823 | *** | 0.814 | | |
| | PE4 | 0.827 | 0.048 | 17.151 | *** | 0.709 | | |
| | PE3 | 0.851 | 0.048 | 17.883 | *** | 0.738 | | |
| | PE2 | 0.903 | 0.051 | 17.859 | *** | 0.737 | | |
| | PE1 | 0.934 | 0.05 | 18.685 | *** | 0.769 | | |
| EE | EE7 | 1 | | | | 0.697 | 0.876 | 0.503 |
| | EE6 | 1.012 | 0.059 | 17.028 | *** | 0.761 | | |
| | EE5 | 1.105 | 0.067 | 16.57 | *** | 0 | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 4 | | | .739 | | | |
| | | EE4 | 0.977 | 0.061 | | 16.09 | *** | 0 .715 | | | |
| | | EE3 | 0.98 | 0.06 | 3 | 16.24 | *** | 0 .722 | | | |
| | | EE2 | 1.083 | 0.071 | 2 | 15.16 | *** | 0 .671 | | | |
| | | EE1 | 1.013 | 0.068 | 4 | 14.81 | *** | 0 .654 | | | |
| | | SI6 | 1 | | | | | 0 .836 | | | |
| | | SI5 | 0.914 | 0.045 | 1 | 20.29 | *** | 0 .746 | | | |
| | | SI4 | 0.812 | 0.043 | 5 | 18.89 | *** | 0 .706 | | | |
| | SI | SI3 | 0.809 | 0.048 | 8 | 16.79 | *** | 0 .643 | 0 .877 | 0 .544 | 0 |
| | | SI2 | 0.895 | 0.047 | 7 | 19.13 | *** | 0 .713 | | | |
| | | SI1 | 0.949 | 0.045 | 1 | 21.05 | *** | 0 .767 | | | |
| | | HM7 | 1 | | | | | 0 .828 | | | |
| | | HM6 | 0.801 | 0.039 | 8 | 20.41 | *** | 0 .725 | | | |
| | | HM5 | 1.048 | 0.045 | 3 | 23.37 | *** | 0 .797 | | | |
| | H | HM4 | 0.987 | 0.041 | 4 | 24.25 | *** | 0 .817 | 0 .929 | 0 .652 | 0 |
| M | | HM3 | 1.185 | 0.045 | | 26.6 | *** | 0 .867 | | | |
| | | HM2 | 1.063 | 0.041 | 1 | 25.83 | *** | 0 .851 | | | |
| | | HM1 | 0.876 | 0.04 | 4 | 21.79 | *** | 0 .76 | | | |
| | | MA DT8 | 1 | | | | | 0 .734 | | | |
| | M | MA | | | | | | 0 | 0 | | 0 |
| ADT | | DT7 | 0.989 | 0.056 | 7 | 17.58 | *** | .719 | .910 | 0 .558 | |
| | | MA | 1.087 | 0.056 | | 19.36 | *** | 0 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| DT6 | | | 9 | | | .788 |
| MA DT5 | 1.018 | 0.054 | 18.74 9 | *** | | 0 .764 |
| MA DT4 | 1.151 | 0.059 | 19.63 1 | *** | | 0 .798 |
| MA DT3 | 0.996 | 0.054 | 18.51 | *** | | 0 .755 |
| MA DT2 | 1.036 | 0.057 | 18.23 7 | *** | | 0 .744 |
| MA DT1 | 0.786 | 0.048 | 16.27 9 | *** | | 0 .668 |

Source: Author

Fornell et al. (1981) referred to the test of discriminant validity that if the correlation coefficient between a factor and the other factors is less than the square root of its AVE value, then it indicates a better discriminant validity between the factors. As can be seen from the results in Table 5, the square root of the Average Variance extraction (AVE) values of the five factors that make up the scale is greater than the correlation coefficients between each factor and the other factors. This proves that the study has good discriminant validity.

**Table 5: Differential validity measurement**

| Factor | MADT | SI | HM | EE | PE |
|---|---|---|---|---|---|
| MADT | **0.747** | | | | |
| SI | 0.446 | **0.738** | | | |
| HM | 0.692 | 0.399 | **0.808** | | |
| EE | 0.422 | 0.365 | 0.404 | **0.709** | |
| PE | 0.438 | 0.331 | 0.456 | 0.426 | **0.753** |

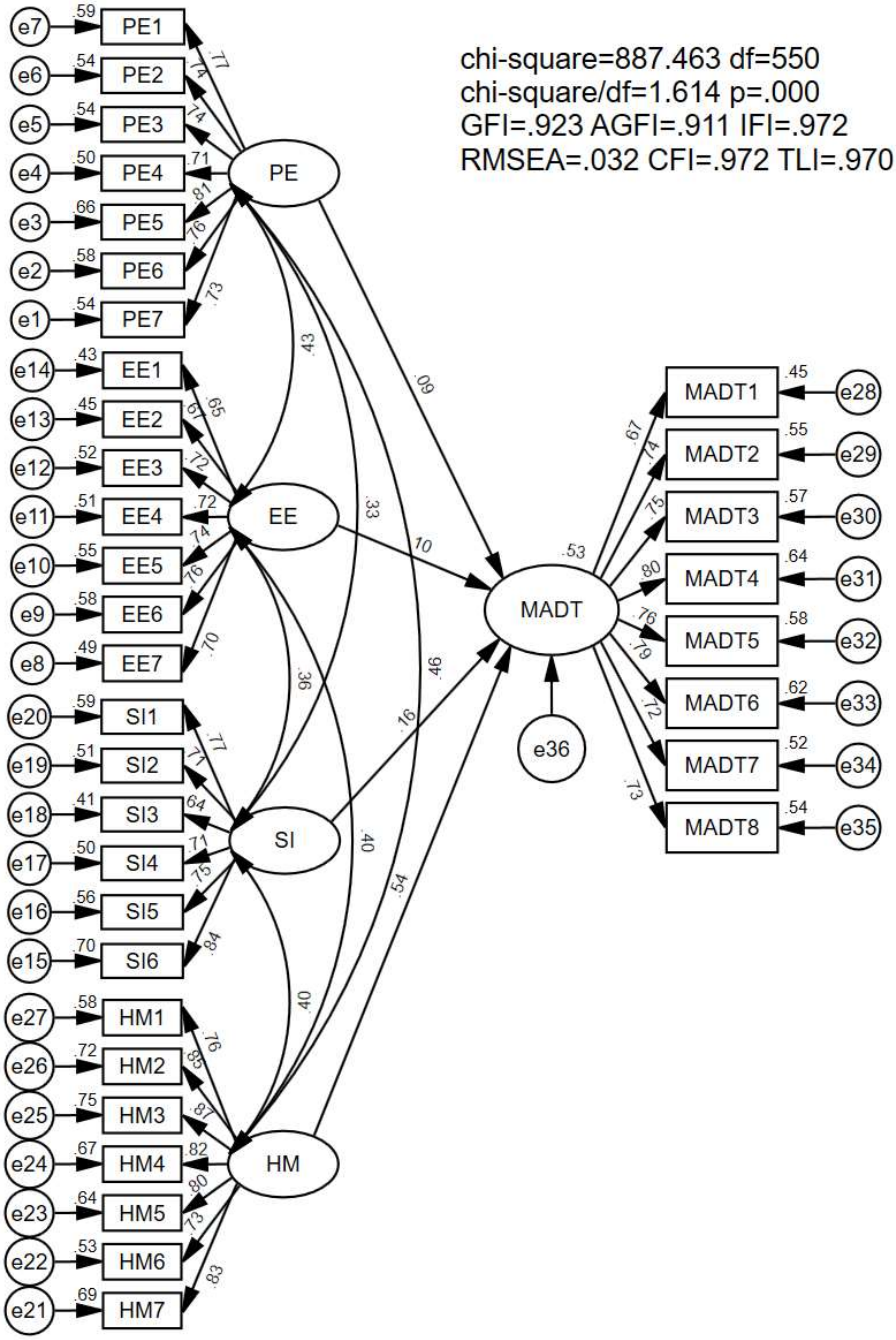
Source: Author

### 5.3 Hypotheses testing Structural Modelling Examination

In order to test the degree of match between the research model and the actual data, this study uses AMOS26 to test the hypothesis of the predictive model. In this study, the structural equation model of user acceptance of digital transformation in the museum of the University of Textile and Clothing was fitted and analysed, and the most commonly used fit test indexes in the test of structural model were selected, and the results of the user acceptance of digital transformation of the museum were shown in Figure 5, with a CMIN of 1.614, an RMSEA of 0.032, a CFI of 0.960, GFI of 0.923, which meets the judgemental standard(Table 6), and the indicators are all relatively reliable, which indicates that the valid questionnaire data collected in

this study and the research model constructed have an ideal fit and can be used for the next step of the study.

**Figure 5: Path Analysis of Structural Equation Model**




Source: Author

**Table 6: Results of Model Fit**

| Fit indicators | Standard value | Statistical results |
|---|---|---|

| | | |
|---|---|---|
| $\chi 2/df$ | < 3.000 | 1.614 |
| CFI | > 0.900 | 0.972 |
| GFI | > 0.900 | 0.923 |
| RMSEA | < 0.080 | 0.032 |
| AGFI/IFI/TLI | > 0.900 | 0.911/0.972/0.970 |

Source: Author

Based on the textile and clothing university museum user acceptance influence factor model, the path coefficients between the above factors to carry out the calculation of the path coefficients between the above factors, to get the path coefficients representing the degree of influence between the variables as in Table 7, which can be seen in the direct effect between the variables and explains the results of the relationship between the determination of the results of the relationship and its direction, which is concluded as follows:

**Table 7:Path Analysis**

| Hypothesis | Path | Std. | Unstd. | S.E. | C.R. | P | Test result |
|---|---|---|---|---|---|---|---|
| H1 | PE→MADT | 0.092 | 0.061 | 0.026 | 2.299 | 0.021 | significant |
| H2 | EE→MADT | 0.105 | 0.083 | 0.032 | 2.596 | 0.009 | significant |
| H3 | SI→MADT | 0.160 | 0.107 | 0.026 | 4.089 | *** | significant |
| H4 | HM→MADT | 0.543 | 0.319 | 0.029 | 11.123 | *** | significant |

Source: Author

PE has a significant positive correspondence to MADT (β= 0.092, P<0.05), the hypothesis is valid;EE has a significant positive correspondence to MADT (β= 0.105, P<0.05), hypothesis is valid;SI has a significant positive correspondence to MADT (β= 0.160, P<0.05), the hypothesis is valid;HM has a significant positive correspondence to MADT (β= 0.543, P<0.05), the hypothesis is valid.

## 6.CONCLUSION

Based on the review of previous literature, this study proposes a theoretical framework of influencing factors on user acceptance of digital transformation in textile and clothing university museums based on the UTAUT2 model; and validates the hypotheses related to PE, EE, SI, HM, and MADT through the process of scientific instrument development. According to the results of

the path analysis, it was found that PE, EE, SI, and HM have a significant positive influence on the user acceptance of digital transformation in textile and clothing university museums.This study aims to explore the influence factors of university students' acceptance of the digital transformation of the University Museum of Textile and Clothing, to understand the user needs, from the perspective of user perception, combined with the uniqueness of the university students' group, endowed with the support of new technologies, to grasp the opportunity of the digital transformation, and to create a normalised, digital management mode. Providing valuable theoretical references for museums to carry out relevant digital activities at a later stage, to enhance user stickiness and user experience, and to realise a better digital transformation. Creating more digital sustainable development paths that are both distinctive and in-depth provides new perspectives, and also provides a corresponding empirical exploration of the digital transformation path of the Textile and Clothing University Museum.

**References**

American Alliance of Museums 2022–2025 STRATEGIC FRAMEWORK. (2021). Approved by the AAM Board of Directors November 16, 2021

Ana, S. (2021). Research methods in discourse analysis: quantitative, qualitative and mixed-methods approaches [articol].

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, 103(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411

Bagozzi R. P. (2011a). Alternative perspectives in philosophy of mind and their relationship to structural equation models in psychology. Psychological Inquiry, 22, 88–99.

Bagozzi R. P. (2011b). Measurement and meaning in information systems and organizational research: Methodological and philosophical foundations. MIS Quarterly, 35, 261–292.

Bagozzi R. P., Verbeke J. M. I., Dietvorst R. C., Belschak F. D., van den Berg W., Rietdijk W. J. R. (2013). Theory of mind and empathic explanations of Machiavellianism: A neuroscience perspective. Journal of Management, 39, 1760–1798.

Bagozzi R. P., Verbeke J. M. I., van den Berg W. E., Rietdijk W. J. R., Dietvorst R. C., Worm L. (2012). Genetic and neurological foundations of customer orientation: Field and experimental evidence. Journal of the Academy of Marketing Science, 40, 639–658.

Bagozzi, R. P. (1992). The self-regulation of attitudes, intentions, and behavior. Social psychology quarterly, 178-204.

Bagozzi, R. P. (1995). Reflections on relationship marketing in consumer markets. Journal of the Academy of Marketing science, 23(4), 272-277.

Bailey RC, Reynoldson TB, Yates AG, Bailey J, Linke S (2006) Integrating stream bioassessment and landscape ecology as a tool for landuse planning. Freshw Biol 52:908–917

Chen, J.F. (2019). A Preliminary Study on the Modernization of Museum Ethnic Costume Presentation and Display. Cultural Industries (18), 44-45. doi:CNKI:SUN:WHCC.0.2019-18-022.

Chen, J.T., Xue, L. & Yuan, C.L. (2023). Research on digital interaction design of museums based on user experience. Da Guan (04), 129-131. doi:CNKI:SUN:DAGN.0.2023-04-042.

Cheung, G. W., & Wang, C. (2017). Current Approaches for Assessing Convergent and Discriminant Validity with SEM: Issues and Solutions. In G. Atinc (Ed.), Academy of Management Proceedings (Vol. 2017 (No. 1)) Advance online publication. https://doi.org/10.5465/ambpp.2017.12706abstract

Cristian, C.& Simona V. O. (2022) Digital Humanism and a Quantitative Analysis of Users Behavior in Virtual Exhibitions during the Pandemic Context, Procedia Computer Science, Vol.214, pp. 384-390,doi:10.1016/j.procs.2022.11.189.

Fan, H. Y. & Cai, X. Y. (2023). Research on the creation of immersive experience space for smart museum. Furniture & Interiors (09), 117-123. doi:10.16771/j.cn43-1247/ts.2023.09.018.

Fornell Claes and Bookstein Fred L. (1981), "Partial Least Squares Estimation in Structural Equations," working paper, The Graduate School of Business Administration, The University of Michigan.

Gek-Siang, T., Ab. Aziz, K., & Ahmad, Z. (2021). Augmented Reality: The game changer of travel and tourism industry in 2025. The Palgrave handbook of corporate sustainability in the digital era, 169-180.

Hair, J. F., Black, W. C., Balin, B. j., & Anderson, R. E. (2010). Multivariate data analysis: Maxwell Macmillan International Editions.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", European Business Review, Vol. 31 No. 1, pp. 2-24. https://doi.org/10.1108/EBR-11-2018-0203

He, Q.J. & Gu, J. (2022). Motivation and evaluation: a study on the willingness of museum visitors to use new technologies based on an integrated technology acceptance model. Museum Management (03), 81-96.

International Council of Museums. (2021). Museums, museum professionals and Covid-19: a third survey.Retrieved from:https://icom.museum/en/covid-19/surveys-and-data/follow-up-survey-the-impact-of-covid-19-on-the-museum-sector/

Li, J.S. (2021). Transforming the social role of museums under the influence of digital technology - cultural sharing and cross-border presentation. Chinese Museums (02), 14-19+125-126. doi:CNKI:SUN:GBWG.0.2021-02-003.

Liao, H. (2023). Research on digital transformation of science and technology museums. Popular Science Research (03), 73-79+114. doi:10.19293/j.cnki.1673-8357.2023.03.009.

Pallud, J., & Straub, D. W. (2014). Effective website design for experience-influenced environments: The case of high culture museums. Information & Management, 51(3), 359-373.

Rauscher, M., &Humpe, A. (2022). Traveling the Past: Raising Awareness of Cultural Heritage through Virtual Reality. Journal of Promotion Management, 28(2), 128-143.

Shen, T. (2022). A study on the application of costume museums in college fashion design courses. Journal of Shandong College of Arts and Crafts (03), 68-71.

Shen, T. (2022). A study on the application of costume museums in college fashion design courses. Journal of Shandong College of Arts and Crafts (03), 68-71.

Shen, Y.C. (2022). Reflections on the digital transformation of museums. China Museum (02), 19-24.

Shephard, A. J., &Pookulangara, S. A. (2020). Student use of university digital collections: the role of technology and educators. Museum Management and Curatorship, 35(4), 392-408.

Siang, T. G., Ab Aziz, K. B., Ahmad, Z. B., &Suhaifi, S. B. (2019, December). Augmented reality mobile application for museum: A technology acceptance study. In 2019 6th International Conference on Research and Innovation in Information Systems (ICRIIS) (pp. 1-6). IEEE.

The Metropolitan Museum of Art. (2017, October 24). Search Content Digital Is More Than a Department, It Is a Collective .... Retrieved March 18, 2023, form https://www.metmuseum.org/blogs/now-at-the-met/2017/digital-future-at-the-met

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. MIS quarterly, 157-178.

Wu, M. L. (2009). Structural equation model: operation and application of AMOS. Chongqing: Chongqing University Press.

Wu, Y., Jiang, Q., Liang, H.E., & Ni, S. (2022). What Drives Users to Adopt a Digital Museum? A Case of Virtual Exhibition Hall of National Costume Museum. SAGE Open, 12(1). https://doi.org/10.1177/21582440221082105

Xu, H. (2023). Digital construction of small and medium-sized museums and its thinking research. Culture Industry (09), 109-111. doi:CNKI:SUN:WHCC.0.2023-09-037.

Yang, L., Liu, G.& Zhai, H.Y. (2021). A study on the influencing factors of science museum users' acceptance of intelligent interactive exhibitions for user experience design. Industrial Engineering Design (06), 10-22. doi:10.19798/j.cnki.2096-6946.2021.06.002.

Yun, Y.B. (2023). Research on Influencing Factors of User Acceptance Willingness of Smart Museums (Master's thesis, Jilin University).

Zhou, J.Y. (2021). Research on the digital development of museums. China State of the Nation (06), 16-21. doi:10.13561/j.cnki. ziggy.2021.06.005.

Zollo, L., Rialti, R., Marrucci, A., &Ciappei, C. (2022). How do museums foster loyalty in tech-savvy visitors? The role of social media and digital experience. Current Issues in Tourism, 25(18), 2991-3008.