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Acceptance and Implications of Holography Technology for Presenting Minangkabau Traditional Clothing in Museums: A Technology Acceptance Model (TAM)

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Abstract—**This study investigates the use of holography technology to present Minangkabau traditional clothing in museums, applying the Technology Acceptance Model (TAM) to assess public response. Survey results show high acceptance, with strong ratings for cultural authenticity and educational value. Perceived ease of use and usefulness significantly influence positive attitudes and behavioral intention, with higher acceptance among females, younger age groups, and those with higher education. Despite these positive outcomes, technical challenges remain, including high implementation costs, limitations in visual clarity, and concerns about digital authenticity. The findings imply that holography can effectively bridge traditional heritage with modern, interactive experiences, making museums more engaging and accessible. The study recommends further research to address technical improvements, cost efficiency, and broader implementation, supporting holography as a strategic tool for cultural preservation and educational innovation.**

Keywords—**Cultural heritage; augmented reality, virtual reality; technology acceptance model.**

I. INTRODUCTION

Cultural heritage is an invaluable educational resource that enhances cultural literacy and promotes knowledge and appreciation of diverse cultures and histories [1]. The preservation of cultural heritage has been widely recognized as an essential component of sustainable development, as it not only strengthens community identity and social cohesion but also supports local economic resilience, environmental sustainability, and cultural diversity through promoting dialogue and cross-group collaboration [2]. Science and technology play a vital role in these preservation efforts by providing advanced tools and methods for documentation, analysis, conservation, environmental monitoring, and community engagement.

By integrating scientific and technological disciplines into conservation practices, it becomes possible to develop innovative, efficient, and sustainable methods for preserving cultural artifacts [3]. On one hand, technology offers new opportunities to document and disseminate culture through more interactive, visual, and accessible media. On the other hand, the digitalization process can also reduce direct engagement with traditional cultural practices, thereby

changing how younger generations appreciate and interpret cultural heritage. These challenges make the integration of technology into cultural preservation a crucial step to ensure that cultural values remain alive and widely understood.

The development of digital technology has driven a shift in how society recognizes and learns about local culture. Previously, cultural learning was dominated by conventional methods such as field visits, direct traditional practices, and community interactions. Now, society increasingly relies on digital platforms like educational videos, virtual museums, augmented reality (AR), virtual reality (VR), and hologram technology. These new technologies can transform the visitor's experience and combine educational content with entertainment [4]. This shift not only reflects changing preferences for more interactive and visual information consumption but also the need for media that can present cultural experiences in an immersive and flexible manner. These technologies enable the representation of culture without geographical or physical constraints, opening new opportunities for cultural preservation. One digital innovation with significant potential in education and cultural preservation is holograms. This technology can realistically represent three-dimensional objects, creating a perception of

physical presence without direct contact. Holograms can display visual details more deeply and allow viewers to see objects from various angles, offering a richer educational experience. In the context of culture, holograms can be used to showcase artifacts and traditional clothing, or to reconstruct cultural events in a more lively and engaging way, especially for generations that tend to be more responsive to high-tech visual content.

The application of hologram technology to display Minangkabau traditional clothing is one of the innovative efforts that has the potential to strengthen the preservation of West Sumatra's culture. Minangkabau traditional attire is not just a traditional costume but a representation of identity that contains social values, customary philosophy, and cultural symbolism. Every component—from colors and shapes to ornaments—reflects the social structure, customs, and worldview of the Minangkabau community. However, a deep understanding of this symbolism tends to decline, especially among the younger generation, as opportunities to interact directly with traditional cultural artifacts become increasingly limited.

One of the benefits of applying hologram technology in museums is its ability to display fragile and hard-to-access cultural heritage [5]. Holograms allow museums to showcase highly detailed and colorful traditional clothing, enabling visitors to observe closely without the risk of physical damage [6]. Additionally, holograms facilitate digital reconstruction of damaged or lost cultural heritage, offering representations that maintain historical accuracy and visual authenticity [7].

Although hologram technology offers significant potential in cultural education, the level of public acceptance of this innovation remains an important question. To understand how society evaluates and accepts the use of holograms as a medium for cultural introduction, the Technology Acceptance Model (TAM) serves as a relevant theoretical framework. Through the TAM framework, we can measure users' acceptance of new technology [8]. Data explored from this model helps explain how users perceive and adapt to new technology [9]. TAM explains that technology acceptance is influenced by two main constructs: perceived usefulness (PU) and perceived ease of use (PEOU). These two factors affect attitude toward using (ATU), or the attitude toward using the technology, which ultimately shapes behavioral intention (BI), or the behavioral interest in using the technology. In the context of cultural preservation, applying TAM can help identify the extent to which society considers holograms a useful, easy-to-use medium for understanding the history of Minangkabau traditional clothing. This technology acceptance model is an important foundation in the development and validation of new innovations.

This review provides a comprehensive analysis of the public's acceptance of holograms, their impact on visitors' museum experiences, and visitors' intentions to use hologram technology. Additionally, it can offer guidance for future research aimed at increasing visitors' interest in learning history through this holography technique.

AR (Augmented Reality) and VR (Virtual Reality) technologies enable immersive experiences that enrich cultural learning, with AR adding layers of information to the real world and VR enabling full simulation of cultural environments. Holograms have become one of the visual technologies capable of displaying three-dimensional objects realistically without the need for special user devices (glasses), thus supporting multi-angle observation and more natural passive/active interaction.

Theoretical debates in digital heritage raise questions about authenticity: does digital representation—including holograms—diminish, preserve, or even enhance an object's authenticity? Several studies and reviews indicate that holograms are effective in realistically displaying physical and aesthetic aspects, potentially expanding educational access without touching the original artifact (conservation). However, cultural conservators emphasize the need for interpretive context accompanying holographic displays (e.g., symbolic explanations, origins, ritual functions) to ensure the meaning of intangible cultural heritage is conveyed. Involving the community of cultural owners in the digitization process is a key factor in maintaining the authenticity of meaning and social value.

Although holographic devices have advanced, there is still limited research exploring public acceptance of this technology in the digitization of cultural heritage, especially regarding Minangkabau traditional clothing. According to the Technology Acceptance Model (TAM), the acceptance of a system depends on its application and users' intention to use it. Therefore, the main issue of this research is to determine how much society accepts and evaluates the use of hologram technology in introducing the history and cultural significance of Minangkabau traditional clothing. This analysis is important to assess the effectiveness of hologram technology as a medium for cultural preservation and as a basis for developing more inclusive, effective, and community-appropriate digitalization strategies.

Several empirical studies and international reviews examine research on hologram applications in museums, education, and cultural promotion. Recent reviews also examine the role of holograms in museums as tools to increase visitor engagement and access to vulnerable artifacts. The results indicate pedagogical and conservation benefits of holography, as well as technical and ethical challenges related to historical representation. The literature on the application of holography in cultural heritage preservation shows an imbalance in empirical research, with representations of architectural artifacts, monuments, and historical figures still dominant, while traditional clothing as a research object remains relatively limited. This gap becomes even more apparent in Minangkabau culture, where the symbolic meaning of traditional clothing holds a central position in the community's value system.

On the other hand, research on public acceptance of holograms as a medium for cultural preservation has not extensively integrated a contextual technology acceptance framework, such as TAM. Therefore, although holograms have been shown to enhance engagement and accessibility in museum and educational contexts, further empirical studies are needed that focus on traditional clothing as a representation object and test public acceptance based on technology acceptance theory.

The hypothesis in this study is as follows: :
- Perceived Ease of Use (PEOU) has a positive effect on Perceived Usefulness (PU).

- Perceived Ease of Use (PEOU) has a positive effect on Attitude Toward Using (ATU).
- Perceived Usefulness (PU) has a positive effect on Attitude Toward Using (ATU).
- Perceived Usefulness (PU) has a positive effect on Behavioral Intention (BI). 5. Attitude Toward Using (ATU) has a positive effect on Behavioral Intention (BI).

II. MATERIALS AND METHOD

A. Materials

Holographic technology has emerged as a transformative tool in museum exhibition design, offering innovative approaches to enhance visitor engagement and perception. This review has examined the impact of holographic displays on the museum experience, highlighting their ability to create immersive, interactive, and emotionally engaging environments. One advantage of holography over other technologies is its ability to provide a true three-dimensional experience without requiring special equipment, such as glasses. This makes holograms highly accessible and suitable for shared viewing experiences. Holograms can also attract visitors' attention and extend their interaction time compared to traditional methods. Additionally, holograms can strengthen visitors' memory and emotional connection to the exhibit, especially when presenting complex history or culture.

The first hologram was created by Emmett Leith and Juris Upatnieks in the United States and Yuri Denisyuk in the Soviet Union in 1962, based on the principles of Gabor holography and Theodore Maiman's laser [5]. Digital holography is an advancement of traditional holography technology that uses digital image sensors and computer processing to capture, reconstruct, and display holographic images [12]. This technique combines the principles of holography with the advantages of digital imaging technology to produce high-quality, versatile holograms [5]. In recent years, the use of digital technology in museums has become essential in creating more immersive and interactive visitor experiences [13]. This trend reflects a broader social shift driven by advances in information and digital technology, marking the 21st century as the digital era. Unlike conventional exhibition formats that rely heavily on static representations, holography enables dynamic and participatory experiences that meet contemporary expectations for digital interactivity. By leveraging advanced optical techniques, holography provides an unparalleled sense of depth and realism, surpassing traditional two-dimensional and digital display methods [5]. The integration of digital media technology into museum exhibition design has significantly enhanced the form and function of museum spaces, especially in art museums, where this technology has introduced new aesthetic dimensions and enriched visitor experiences [14].

Among these technologies, holographic displays have emerged as an innovative tool to enhance visitor engagement with exhibitions [5]. Unlike traditional two-dimensional displays or other interactive technologies, holography offers a unique combination of realism, depth perception, and dynamic interaction, allowing visitors to connect more deeply with the exhibit.

Holography functions as a visualization tool, enabling the display of digital replicas of fragile artifacts that may not be accessible to the public. Secondly, holography provides a scientific approach to preservation, allowing researchers to document and reconstruct artifacts before further degradation occurs [15]. Holographic displays enable museums to showcase three-dimensional representations of artifacts, often without the need for special equipment to view overlapping images, making them more accessible to a wider audience [16].

By providing a sense of depth and physical presence, holography allows visitors to experience objects as if they are physically in front of them, creating a strong emotional connection and enhancing the overall visitor experience [17].

B. Method

Intangible cultural heritage refers to practices, representations, expressions, knowledge, and skills—including instruments, objects, artifacts, and related cultural spaces—that are recognized by communities, groups, and sometimes individuals as important parts of their cultural identity. The main characteristic of intangible cultural heritage is its living nature, transmitted across generations through social practices, and adaptable to changes in the social environment and technology. The UNESCO Convention in 2003, which emphasizes the importance of identification, documentation, and safeguarding, with community participation, to keep these practices relevant and sustainable. In contemporary practice, digitalization (e.g., electronic documentation, 3D models, immersive media) has become one of the strategies for protecting intangible heritage by reducing its vulnerability to loss of intergenerational transmission and pressures from globalization.

III. RESULTS AND DISCUSSION

Digital holography is a technological advancement from traditional holography that uses digital image sensors and computer processing to capture, reconstruct, and display holographic images [18]. This technique combines the principles of holography with the advantages of digital imaging technology to produce high-quality, versatile holograms.

The hologram effect produced in a reflection-based acrylic holography system, often categorized as a holographic display, is a manifestation of simple geometric optical principles, namely the law of light reflection (angle of incidence = angle of reflection). When light from a digital screen is reflected from a clear acrylic sheet at a specific angle, the direction of the reflected light is determined by the acrylic sheet's orientation relative to the light source. By tilting the acrylic, for example, at 45°, the light from the horizontal screen will be reflected straight toward the observer, making the digital object appear to float in front of the display space in proportion to the observer (classic reflection geometry). This reflective principle is similar to the Pepper's Ghost technique, in which a tilted transparent surface captures and reflects images to create a three-dimensional effect in the air, even though the image remains a two-dimensional projection reflected by a transparent medium.

In the context of traditional Minangkabau clothing presentations, perspective variations such as 180°, 270°, or 360° are intended to optimize the viewing area, allowing the

visual display to be viewed from various angles by the audience and enhancing immersive perception and cultural engagement. These variations can be achieved through specialized reflective geometric configurations (such as reflective pyramids or reflective prisms) that allow reflections from multiple sides or the entire surrounding view, making the digital image of the traditional clothing appear within a real space in the middle of the exhibition stage. Although this technique is often called a 'hologram' in exhibition practices and popular media, scientifically, the effect produced is a result of manipulating light reflections and acrylic angle design, rather than reconstructing optical wave interference as in classical holography with laser wave interference mediums, which is also an important area of study in modern holography literature.
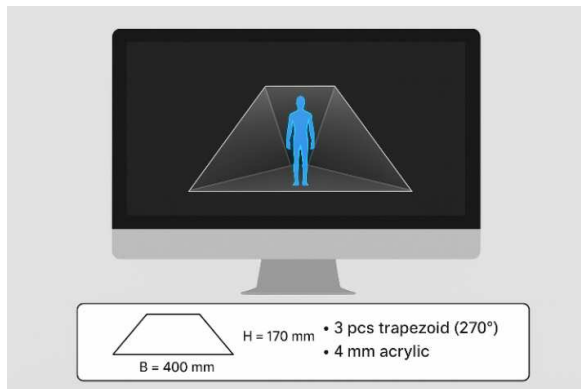

Fig. 1 Holographic Visualization of Traditional Clothing

The three-dimensional modeling results show that Minangkabau traditional clothing made from Tenun Kubang fabric can be accurately represented visually using a digital mannequin-based modeling approach. The generated 3D model displays a proportional clothing silhouette, a good fit between the body structure and the garment elements, and the consistent application of the characteristic Tenun Kubang motifs, thereby clearly presenting the aesthetic identity of the local culture in 3D.
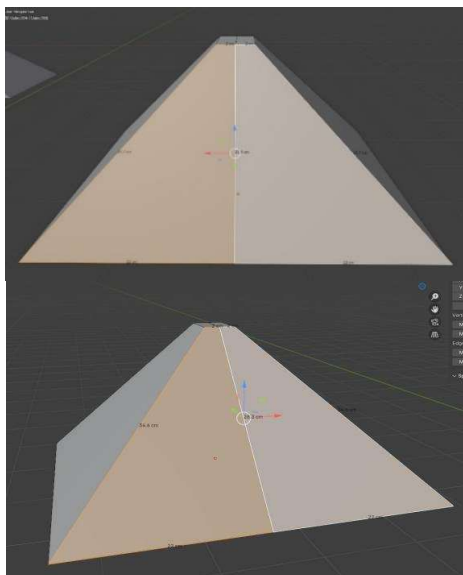

Fig. 2 3D Modeling

The geometric details of the woven fabric are effectively visualized through displacement and normal mapping, allowing the fabric's folds, thread textures, and weaving patterns to appear realistic without significantly increasing polygon count. The accuracy of the motif and color visuals is enhanced by using original reference images of Tenun Kubang and controlled UV unwrapping techniques, ensuring that the fabric pattern distribution appears proportional and distortion-free during rendering. The texturing process produces a material representation of the fabric with characteristics close to the original weave, marked by the natural color of the threads, subtle light reflections, and a matte surface texture. Dominant colors such as gold, maroon, and emerald green serve not only as aesthetic elements but also as representations of the philosophical values of Tenun Kubang, related to luxury and social status. The final visualization, in the form of images and 3D animations, demonstrates consistent visual quality and is ready to be integrated into digital promotional media or holographic displays. In this context, holograms excel in showcasing object details such as fabric textures, embroidery motifs, and the structure of the 'suntiang' through rich and precise three-dimensional visualization [19].

The implementation of hologram projection demonstrates that the optimized 3D model of Tenun Kubang can be effectively visualized as a three-dimensional illusion. Arranging the display on four sides provides a 270° to 360° viewing angle, with light reflections through acrylic prisms creating the perception of a floating object that can be observed from various angles. The setup of lighting, color contrast, and visual environment significantly contributes to the sharpness and stability of the resulting hologram's visuals. By providing three-dimensional visualization of historical objects, the hologram offers a more immersive and interactive experience than traditional museum displays [5].

Fig. 3 Hologram Projection

The visualization and hologram projection results obtained not only demonstrate success in technical and aesthetic aspects but also open up opportunities for analysis of how this technology is received by the public as a medium for presenting cultural heritage. Therefore, the hologram of Minangkabau traditional clothing using the 3D model of Tenun Kubang will next be displayed at an art exhibition at Padang State University to observe how visitors respond to and accept the Minangkabau Tenun Kubang traditional clothing hologram.

Fig. 4 Traditional Minangkabau Clothing Hologram Exhibition at Padang State University

The implementation of holographic technology in presenting Minangkabau traditional clothing at the museum shows significant potential to increase visitor attraction and engagement. Holographic visualization allows visitors to observe the details of traditional attire in three dimensions from various angles, without physical limitations such as viewing distance or the risk of damage to the original collection. This contributes to a more immersive visitor experience than conventional static exhibition methods. However, in practice, several challenges remain, including high implementation costs of hologram technology, technological limitations, and concerns about digital authenticity, which continue to pose major obstacles [20].

A. Community Acceptance of Holography Technology for Traditional Clothing

The results of the analysis of community acceptance of Minangkabau traditional clothing holography technology were analyzed using the Technology Acceptance Model (TAM) framework, which includes the constructs Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude Toward Using (ATU), and Behavioral Intention (BI). TAM, which was first introduced by Davis (1986; 1989), explains that an individual's intention to use technology is primarily influenced by Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU refers to the extent to which an individual believes that using the technology will enhance their performance, while PEOU describes the perceived ease of operating the technology. These two constructs shape the initial perception of users, which then influences Attitude Toward Using (ATU) and ultimately Behavioral Intention (BI) to adopt the technology. This model is widely used in research on modern technology adoption because it provides a simple yet robust theoretical framework for predicting user behavior across various contexts, including education, public services, commercial sectors, and digital technologies based on visual interaction, such as holograms. Several meta-analyses also show that TAM remains relevant for explaining the variability in technology usage intentions across cultures and domains, and can be expanded with external constructs such as trust, experience, and risk perception to improve its predictive capabilities in increasingly complex technological environments.

This study uses a descriptive quantitative approach with a survey method to analyze public perceptions of hologram media displaying Minangkabau traditional clothing. This approach was chosen to provide an overall picture of how society evaluates the use of digital technology, particularly holograms, for preserving regional cultural heritage. The research respondents were predominantly male (56.70%)

compared to females (43.30%), with relatively young age characteristics. Most respondents were under 20 years old (63.33%), followed by the 21–30 age group (30.00%), while respondents over 30 years old represented only a very small proportion. In terms of educational background, the majority of respondents were high school graduates or equivalent (66.67%), followed by bachelor's degree graduates (26.67%), while respondents with a Diploma and Postgraduate education were limited in number. This composition indicates that the research sample represents the younger generation with middle- to high-level educational attainment, who are generally the most adaptable to digital technology innovations.

TABLE I
DEMOGRAPHIC PROFILES

Data	Category	Frequency	Percentage
Gender	Female	26	43.30%
	Male	34	56.70%
Age	< 20 years	38	63.33%
	21 - 30 years	18	30.00%
	31 - 40 years	3	5.00%
	> 40 years	1	1.67%
Last Education	Senior High School	40	66.67%
	D3	1	1.67%
	Bachelor	16	26.67%
	Postgraduate	3	5.00%
Have used hologram technology before	Yes	27	45.00%
	No	33	55.00%
Frequency of participating in activities and content related to the Minangkabau culture	Never	2	3.33%
	Seldom	14	23.33%
	Seldom	33	55.00%
	Sering	11	18.33%

Regarding technological experience, more than half of the respondents (55.00%) have never used hologram technology, while 45.00% reported having initial experience with hologram technology. In the context of cultural engagement, the majority of respondents (55.00%) occasionally participate in activities or access content related to Minangkabau culture, followed by those who rarely engage (23.33%) and those who frequently engage (18.33%), while those who never engage are very few. This pattern indicates a moderate level of cultural closeness, so respondents have sufficiently relevant cultural experiences to assess the potential of holograms as a preservation medium, yet it still reflects variations in the intensity of cultural involvement, which is important in analyzing perceptions and acceptance of the technology.

Overall, the descriptive analysis shows that holography technology has a relatively high level of acceptance, with an average acceptance score (on a 1-5 scale) of 3.95, supported by perceptions of cultural authenticity (3.91) and educational value (3.85). The evaluation results indicate that the Cultural Authenticity aspect scores relatively high (3.91), suggesting that respondents believe that visualizations of Minangkabau traditional clothing through holograms can still maintain identity, symbolism, and character of local culture. This finding aligns with virtual and digital heritage studies, which emphasize that precise, visually accurate digital representations can preserve the authentic value of cultural

artifacts, even when the objects are not physically displayed [21]. Additionally, Xu et al. [5] state that holography in museums serves as an intermediary medium that conveys cultural meaning and symbolism without compromising the integrity of original artifacts, which are vulnerable to damage. Therefore, the high perception of cultural authenticity in this study becomes an important factor supporting technology acceptance, as communities tend to be more open to digital innovations when the content presented aligns with cultural values they already know and believe in.

On the other hand, the Visual Information Clarity aspect received a lower score (3.46), although it still falls within the good category. This value indicates that the visual details, information readability, or the hologram's content presentation structure still have room for improvement. These findings are consistent with the literature, which states that the effectiveness of visual technology in museums is not only determined by the level of immersion but also by the clarity of information and the media's ability to convey details effectively without causing visual confusion [14]. Xu et al. [5] also emphasize that the quality of visual resolution, lighting, and the composition of hologram displays directly influence visitors' understanding. Therefore, although the hologram has successfully preserved cultural authenticity, optimizing visual information clarity is essential to enhance the learning experience and the overall effectiveness of cultural communication.

TABLE II
PUBLIC PERCEPTION ANALYSIS OF MINANGKABAU TRADITIONAL CLOTHING HOLOGRAM

Variable	Rata-Rata Skor (1-5)
Visual Appeal	3.81
Cultural Authenticity	3.91
Educational Value	3.85
Clarity of Visual Information	3.46
Technology Acceptance	3.95

From the perspective of public acceptance, holography technology is seen as capable of bridging traditional values with the expectations of the modern generation for interactive and attractive visual information presentation. The display of traditional clothing in the form of three-dimensional illusions not only serves as an educational medium but also provides a more contextual cultural interpretation, especially for young visitors who tend to have a strong interest in visual technology. Thus, holography plays a transformative role as a medium that enhances the relevance of cultural heritage amid the development of digital technology.

In addition to their visual impact, holograms in museums also shape public perception of cultural preservation efforts. Digital presentation is considered an innovative form that does not diminish the authentic value of culture, as long as the visual representation remains grounded in valid traditional sources. In this context, holography is seen as a complement, not a replacement, for original artifacts, preserving cultural values while expanding public access and understanding of the richness of Minangkabau traditional attire.

In the Technology Acceptance Model, before hypothesis testing, the data are first normalized and evaluated using an outer model to ensure the validity and reliability of the constructs. The results of the convergent validity test show that all indicators have outer loadings above the threshold of 0.70, except for one PEOU indicator (PEOU06 = 0.744), which remains within an acceptable range. The Average Variance Extracted (AVE) values for all constructs are above 0.80, indicating that each construct adequately explains the variance of its indicators. Therefore, the indicators used are considered relevant and representative, so further elimination of indicators is not necessary.

Discriminant validity tests based on AVEs and cross-loadings also indicate that each construct shows the highest correlations with its own indicators relative to other constructs. Although there are relatively high correlations between constructs—which is common in the TAM model—these values are still acceptable because, conceptually, PEOU, PU, ATU, and BI have strong theoretical relationships. Additionally, the reliability test results show very high Cronbach's alpha and Composite Reliability values (>0.94) for all constructs, indicating excellent internal consistency and strong measurement stability.

The testing results show that all hypotheses in this study are supported by a positive, statistically significant effect. Perceived Ease of Use (PEOU) significantly influences Perceived Usefulness (PU) (H1) and Attitude Toward Using (ATU) (H2), indicating that the ease of use of holography technology plays an important role in increasing perceived benefits and fostering a positive attitude among museum visitors. These findings suggest that easy-to-understand holography technology allows visitors to focus more on cultural content without being burdened by technical complexity.

Next, Perceived Usefulness (PU) has been proven to significantly influence Attitude Toward Using (ATU) (H3) and Behavioral Intention (BI) (H4). This confirms that perceived benefits, especially in educational aspects and cultural representation, are the main factors driving positive attitudes and the intention to use holography technology. Additionally, Attitude Toward Using (ATU) has a significant effect on Behavioral Intention (BI) (H5), indicating that visitors' positive attitudes serve as a key mediator in encouraging acceptance and the continued use of Minangkabau traditional clothing holography technology in museum settings.

TABLE III
HYPOTHESIS

	Relationship between variables	Coefficient	t-statistic	p-value	Notes
H1	PEOU → PU	0,87	12,46	< 0,001	Significant
H2	PEOU → ATU	0,82	11,73	< 0,001	Significant
H3	PU → ATU	0,79	10,84	< 0,001	Significant
H4	PU → BI	0,76	9,96	< 0,001	Significant
H5	ATU → BI	0,88	13,27	< 0,001	Significant

Overall, the public's acceptance of holography technology for presenting Minangkabau traditional clothing at the museum shows a positive trend, especially when the technology is designed to prioritize visual accuracy, cultural and philosophical values, and visitor experience. These findings indicate that integrating holography into museum exhibition spaces could be an effective strategy for strengthening the museum's educational and promotional functions as a technology-based cultural preservation institution.

B. Segmentation of Traditional Minangkabau Clothing Holography Technology Acceptance

Segmentation analysis reveals variations in technology acceptance across demographic characteristics. The female group shows higher acceptance than the male group, and, by age, the groups under 20 and 31–40 years old show the highest acceptance scores. In terms of education, respondents with master's and doctoral degrees, as well as those with a D3 (associate degree), show stronger technology acceptance, indicating that educational literacy levels play a role in shaping positive perceptions of culture-based visual technology.

TABLE IV
TECHNOLOGY ACCEPTANCE SEGMENTATION

Data	Category	Average Technology Adoption Score
Gender	Female	4.2
	Male	3.8
Age	< 20 years	4.1
	21 - 30 years	3.7
	31 - 40 years	4.1
	> 40 years	4.0
Last Education	Senior High School	3.97
	D3	4.2
	Bachelor	3.94
	Postgraduate	4.3
Have you ever used hologram technology before?	Yes	3,94
	No	4.01
Frequency of participating in activities and content related to Minangkabau culture	Never	4.00
	Seldom	3.92
	Sometimes	3.99
	Often	4.01

Interestingly, respondents who had never used hologram technology before still showed a high level of acceptance, indicating that hologram technology has an intuitive character and is easy for lay users to understand. Additionally, the frequency of involvement in Minangkabau cultural activities did not show significant differences, suggesting that holography technology can reach both audiences who are already familiar with cultural content and those who have not interacted extensively with it.

IV. CONCLUSION

Theoretically, these findings strengthen the validity of TAM in the context of applying visual technology for cultural preservation, especially within museum environments. Contextually, the research results indicate that holography technology can serve as a strategic medium that bridges Minangkabau cultural heritage with modern society's expectations for interactive and informative visual experiences. Therefore, the implementation of holography is not only technically accepted but also appreciated as an innovation that enriches cultural experiences without losing its authentic value.

In terms of research, collaboration among researchers is necessary to discuss, study, and develop preservation techniques for cultural assets, thereby encouraging innovative methods in cultural preservation and increasing visitor interest in museums. Additionally, the long-term sustainability and scalability of holography applications require further research to ensure the feasibility of this standard exhibition practice. Future studies should focus on refining technical aspects of holography to improve accessibility, cost efficiency, and integration within various museum environments. Most existing studies use subjective research methods without an objective approach supported by data. Future research can explore a broader participant base, diverse holography designs, and interdisciplinary collaboration among curators, designers, and technologists, which will be key in developing holographic experiences that complement rather than replace traditional museum practices.

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