The Impact of Applied Informatics and Digitalization of Traditional Arts

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A B S T R A C T

This article examines the role of applied informatics in the digitization of traditional arts as an effort to bridge the gap between culture and technology. In the context of globalization and rapid technological advancement, traditional arts face challenges to remain relevant and preserved. Digitization offers innovative solutions that enable the documentation, modernization, and distribution of traditional artworks through various digital platforms. Through methods such as 3D modeling, Augmented Reality (AR), and Virtual Reality (VR), the digitization process not only preserves authenticity and cultural values, but also introduces new ways to appreciate and experience art. The study also highlights how applied informatics facilitates the accessibility of traditional artworks, both through virtual exhibitions and e-commerce platforms, which expands the audience reach and increases marketing opportunities for artists. In addition, the article emphasizes the importance of arts education and training that uses digital technology to teach techniques and cultural contexts to the younger generation. The results of the study show that the integration of technology in traditional arts not only contributes to cultural preservation but also creates opportunities for artistic innovation and deeper interaction with cultural heritage. Thus, this article is expected to provide insight for academics, artists, and practitioners in the field of applied informatics about the importance of collaboration between art and technology in preserving culture in the digital era.

A R T I C L E   I N F O

1. INTRODUCTION

In the era of globalization and rapid technological advancement, traditional arts face significant challenges in terms of their preservation and relevance amidst social and cultural changes (Duester, 2022). Traditional art heritage, rich in cultural, technical, and aesthetic values, is often threatened with extinction or forgotten by the younger generation who are increasingly familiar with digital technology. Therefore, there needs to be a systematic effort to bridge the gap between culture and technology, and one of the most effective ways to achieve this goal is through applied informatics and digitalization (Spyrou et al., 2022).

Applied informatic digitizing traditional artworks refers to the process of converting or transforming art created by traditional methods, such as paintings, carvings, weaving, or sculptures, into a digital format (Charfeddine & Umlai, 2023). It involves using technology to document, reproduce, or disseminate the artwork in digital form. The purpose of digitizing traditional artworks is usually for preservation, accessibility, and wider distribution. matics provides the tools and methods needed to digitize traditional art works (Chernbumroong et al., 2024). Through digital technology, artists and researchers can document, modernize, and distribute artworks, thereby increasing the accessibility and understanding of their cultural heritage to the public. Digitalization is not only about creating digital copies of artworks, but also involves the development of interactive applications, virtual exhibitions, and immersive experiences that facilitate deeper interaction between the public and traditional arts (Yuniana Cahyaningrum, 2024).

The process of digitizing traditional art also provides new opportunities for creative innovation (Nisticò, 2024). By utilizing technologies such as 3D modeling, augmented reality (AR), and virtual reality (VR), artists can explore new ways to present and interpret artworks, creating more engaging and educational experiences (Giménez-El-Amrani et al., 2024). In addition, e-commerce platforms allow traditional artists to market their works globally, reach a wider audience, and increase revenue potential (Cahyaningrum, 2024).

This process is not just about documenting and disseminating artworks, but also encouraging the development of art itself in new ways that are not possible with traditional methods (Zhao & Kim, 2024). Artificial Intelligence (AI) opens up new spaces for creative experimentation. AI can be used to analyze patterns, techniques, and styles in traditional art, then produce new works inspired by those elements. This creates new ways for artists to explore how traditional art can evolve in the context of modern technology (Chan, 2024). For example, AI algorithms can be programmed to paint in the style of traditional artists or transform traditional artworks into something entirely new (Benis et al., 2022).

The process of digitizing traditional art not only preserves and disseminates artworks, but also becomes a tool for greater innovation in the art world (Bjørnstad et al., 2024). Through technologies such as AI, VR, AR, and NFT, artists have more room to experiment and create. This opens a new chapter where traditional art and modern technology complement each other, pushing creative boundaries towards new and more dynamic art forms (Balzani et al., 2024). The process of digitization can help in the conservation of traditional artworks. Damaged or outdated artworks can be digitally restored to represent their original appearance. In some cases, digital technology also allows for the incorporation of elements from lost cultures or damaged artworks, allowing artists or conservators to recreate the art in a more complete form (De Felice et al., 2024).

Digital technology opens up access to global markets, but it also means significantly increased competition. Local artisans now have to compete with similar products from other countries that may be produced at a lower cost or faster (Ma et al., 2024). The use of digital technology can help promote sustainability in the craft industry. Artisans can use technology

to trace the source of raw materials, minimize waste, and optimize production processes to be more environmentally friendly (Dimitriou et al., 2024).

Digital technologies, such as computer-aided design (CAD), 3D printing, laser cutting, and other digital production tools, have introduced new ways of making and designing craft products (Han et al., 2024). On the other hand, these technologies allow artisans to create more intricate designs, increase production efficiency, and expand their market reach through e-commerce and digital platforms. On the other hand, there are concerns that the use of digital technology can diminish the artistic value of manual skills, threaten the sustainability of traditional techniques, and change the cultural meaning of handicrafts (Cahyaningrum et al., 2021).

The growth in the number of internet users has allowed artists and creators to reach audiences around the world without geographical boundaries. This has enabled advances in digital payment technology and cybersecurity to make buyers and sellers more confident in transacting online (Mogaji & Nguyen, 2024). Global consumers are attracted to artwork and products that reflect local culture, providing opportunities for artists to market tradition-based works to international markets. Globalization has introduced different cultures to a global audience, increasing appreciation for international art and design (Athari et al., 2024).

This article aims to explore the role of applied informatics in the digitization of traditional art and how this process can bridge the gap between culture and technology (Li et al., 2024). Through an analysis of various digitization methods and technological implementations, this article will show how the integration of traditional art with technology can preserve cultural heritage while encouraging innovation and creativity in the art world. Thus, it is hoped that this article can provide insight and inspiration for academics, artists, and practitioners in the field of applied informatics in preserving and celebrating the richness of traditional art in the digital era (Akbari et al., 2024).

2. METHODS

The method used in this study uses a qualitative approach to explore the role of applied informatics in the digitalization of traditional arts and its impact on cultural preservation. The research methods used include:

1. Literature Review

The study began with a literature review to gather information on the concept of digitizing traditional arts, principles of applied informatics, and relevant technologies such as 3D modeling, augmented reality (AR), and virtual reality (VR). The study included academic articles, books, and online sources that discussed the relationship between art, technology, and culture.

2. In-depth Interviews

Interviews were conducted with artists, craftsmen, and practitioners in the field of applied informatics who had experience in digitizing traditional arts. The interviews aimed to understand their views on the benefits, challenges, and opportunities offered by digitization. Interview questions were designed to explore their experiences in using technology to preserve and modernize traditional arts, as well as the perceived impact on the arts community.

3. Case Studies

The study also involved the analysis of several case studies where applied informatics has been successfully applied to digitize traditional artworks. These case studies included digitization projects from various regions that highlighted success in preserving and promoting traditional arts through digital technology. Each case study is analyzed to explore

the strategies, technologies, and outcomes obtained, as well as the involvement of local communities in the digitalization process.

4. Participatory Observation

The researcher conducted participant observation on several activities related to the digitalization of traditional arts, such as workshops, virtual exhibitions, and technology training for artists. This observation provides insight into how technology is applied in art practices and how artists interact with technology. During the observation, the researcher recorded the interactions, techniques used, and responses and enthusiasm of participants towards the use of technology in art.

5. Data Analysis

Data collected from interviews, case studies, and observations were analyzed using thematic analysis techniques. The data obtained were organized into relevant categories and themes, allowing the researcher to identify patterns, challenges, and opportunities in the application of applied informatics for the digitalization of traditional arts.The results of this analysis were used to formulate relevant conclusions and recommendations for further development in this field.

This research method is expected to provide a comprehensive picture of the role of applied informatics in the digitalization of traditional arts, as well as its impact on cultural preservation. With a holistic qualitative approach, this study aims to enrich understanding of the synergy between culture and technology, and pave the way for innovation in traditional arts in the digital era.

3. RESULTS AND DISCUSSION

This section presents the results of research on the role of applied informatics in the digitization of traditional art and discusses the implications resulting from the integration between culture and technology. The results of the research were obtained from literature analysis, in-depth interviews, case studies, and participant observation.

1. The Importance of Digitization for the Preservation of Traditional Art

The results of the study indicate that digitization is a crucial step to preserve traditional art that is increasingly threatened by changes in the times. Artists and craftsmen interviewed stated that digitization allows them to document artworks comprehensively and store important information that might otherwise be lost over time. By creating a digital archive, works that were once difficult to access can now be enjoyed by future generations.

2. Technologies Used in Digitization

Based on observations and interviews, some applied informatics technologies commonly used in the digitization of traditional art include:

- 3D modeling: This technology is used to create digital representations of artworks, allowing users to see details from various angles. Artists reported that 3D modeling helped them explore new designs that could inspire future artworks.

- Augmented Reality (AR) and Virtual Reality (VR): The use of AR and VR in traditional art exhibitions provides an immersive experience that allows the audience to interact with the artwork in a deeper way. Exhibition projects that use this technology attract visitors and provide a broader cultural context.

3. Challenges in Implementing Digitalization

Despite the many benefits gained, this study also identified several challenges in implementing applied informatics for the digitalization of traditional arts:

- Technology Barriers : Several artists expressed difficulties in accessing the technology needed for digitalization, both in terms of cost and training. This suggests the need for support from government agencies or arts organizations to provide better access to traditional artists.
- Lack of Understanding of Technology : Many artists do not fully understand how digital technology works and how to integrate it into their art practice. Better education is needed to reduce this knowledge gap.

4. Innovation in Traditional Arts

Interviews with artists who have successfully implemented digitalization indicate that this process not only maintains the authenticity of traditional arts, but also encourages innovation. Many artists develop new works that combine traditional elements with digital techniques. For example, some artists create interactive artworks that invite audience participation, making traditional arts more relevant in a modern context.

5. Impact on Audiences and Communities

The digitalization of traditional arts through applied informatics also has an impact on audiences and communities. With the advent of digital platforms and virtual exhibitions, more people can access traditional art without geographical limitations. This broadens the audience reach and increases appreciation for traditional art. Interviews with visitors to virtual exhibitions indicate that they feel more connected to different cultures and gain a deeper understanding of the existing cultural heritage.

The results of this study confirm that applied informatics has a significant role in the digitization of traditional art, bridging the gap between culture and technology. Although there are challenges in its implementation, the benefits gained from digitization, such as preservation, innovation, and increased accessibilit, are significant. To maximize the potential of digitization, collaboration between artists, technologists, and cultural institutions is needed to create an ecosystem that supports the integration of traditional art and modern technology. In this way, traditional art will not only survive but also thrive in the dynamic cultural context of the digital era.

Discussion table that can be used to summarize the results of the study on "Applied Informatics and the Digitization of Traditional Art: Bridging the Gap between Culture and Technology" can be shown in the table 1.

Table 1. Research Gap Result

Theme	Findings	Implications
The Importance of Digitalization	Digitizing traditional arts helps in the preservation of endangered works, as well as documenting techniques and cultural contexts.	Providing better access for future generations to understand and appreciate cultural heritage.

Technology Used	The use of technologies such as 3D modeling, AR, and VR in digitalization enriches the audience experience and increases interactivity with the artwork.	Encourage the adoption of new technologies among artists for innovation in traditional art creation.
Challenges in Implementation	Artists face barriers in access to technology and a lack of understanding of how to use it.	There needs to be support from government and educational institutions to improve skills and accessibility.
Innovation in Traditional Arts	Digitalization drives innovation by creating new works that combine traditional elements and modern technology, making art more relevant.	Providing a platform for artists to explore their creativity and attract new audiences.
Influence on Audience	Virtual exhibitions and digital platforms increase the accessibility of artworks, broaden audience reach and enhance appreciation of culture.	Creating better awareness and connectivity between the younger generation and their cultural heritage.
Collaboration between Disciplines	Collaboration between artists and technologist's results in innovative and engaging projects, combining traditional techniques with digital technology.	Encouraging a mutually beneficial interdisciplinary ecosystem in the development of arts and technology.

This Table 1. explains to organizes the main themes, findings, and implications of the study. This table provides a clear overview of the important aspects under discussion and can help readers understand the relationship between applied informatics, digitalization, and traditional arts.

4. CONCLUSION

Based on the results and discussion, this study shows that applied informatics plays a very important role in the digitalization of traditional arts, serving as a bridge connecting culture and technology. Digitalization is not just a technical process; it is a strategic effort to preserve cultural heritage that is increasingly threatened by changing times and technological developments. By utilizing technologies such as 3D modeling, augmented reality (AR), and virtual reality (VR), traditional arts can be presented again in a more interesting and interactive way, thereby increasing accessibility and audience experience.

The results of the study indicate that digitalization provides opportunities for innovation in traditional arts. Artists who adopt digital technology are not only able to maintain the authenticity of their works, but also create new works that are relevant to the modern context. This creates a positive synergy between tradition and innovation, where traditional arts are not only preserved but also developed.

However, challenges in implementing digitalization, such as technological constraints and lack of understanding about the use of digital technology, need to be overcome. Better education and support from related institutions can accelerate the digitalization process and improve artists' skills in using technology.

Overall, applied informatics and the digitalization of traditional arts provide new hope for cultural preservation. Closer collaboration between artists, technologists, and cultural institutions is expected to create an ecosystem that supports the sustainability of traditional arts in the digital era. With the right steps, traditional arts can continue to play an important role in society, inspiring future generations and ensuring that cultural heritage lives on in relevant and dynamic forms.

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