

Digital Transformation in the Exploitation of Traditional Performing Arts for Tourism Development in Vietnam

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ABSTRACT

In the context of digital transformation and globalization, the application of digital technologies in the field of traditional performing arts has become an inevitable trend for the preservation and promotion of intangible cultural heritage. This paper focuses on analyzing various forms of digital technology applications, including Virtual Reality (VR), Augmented Reality (AR), Artificial Intelligence (AI), and Big Data, in two representative art forms of Southern Vietnam: Đờn ca tài tử and Cải lương. Through an analysis of practical examples in Ho Chi Minh City and international case studies, the study clarifies the role of technology in redefining performance spaces, enhancing audience experiences, and shaping a digital ecosystem for traditional performing arts. The paper also identifies challenges and proposes an appropriate implementation model for Vietnam, aiming to contribute to the development of a comprehensive digitalization strategy for traditional arts linked to sustainable cultural tourism development.

Keywords: Digital transformation, AI, intangible cultural heritage, cultural tourism, Vietnam.

1. INTRODUCTION

In the context of the booming digital technology era, the application of technology to the field of traditional performing arts has become an inevitable trend for the preservation and dissemination of intangible cultural heritage. With the support of online platforms, today's audiences can remotely access performances or heritage spaces, opening up significant opportunities to promote traditional arts to younger generations - the key audience in the digital environment. In Vietnam, traditional art forms such as Đờn ca tài tử and Cải lương have been internationally recognized but are facing the risk of fading due to a lack of young audiences and successors. Digital transformation, particularly after the COVID-19 pandemic, is no longer merely a temporary solution but is gradually becoming a long-term strategy for archiving, teaching, and innovating artistic experiences. Within this context, this study focuses on analyzing the potential application of digital technologies such as VR/AR, AI and Big Data in the exploitation and development of traditional performing arts, using Ho Chi Minh City and several notable international case studies as key points of analysis.

2. THEORETICAL FRAMEWORK AND RESEARCH METHODS

Digital transformation in the cultural sector refers to the integration of digital technologies into all aspects of cultural and artistic activities, from creation, storage, and management to the dissemination of cultural products and services. According to UNESCO (2022), cultural digitization is no longer limited to the use of the web and social media but has expanded to include advanced technologies such as AI, VR, AR, and robotics. These technologies have the potential to "revolutionize" the ways we preserve, create, access, and experience culture. For example, AI can automate language translation and heritage data analysis; VR/AR can create immersive experiences for art appreciation; while Big Data and high-speed networks (5G) allow for the storage and transmission of vast volumes of digital heritage content with minimal latency. These trends introduce new requirements in heritage conservation theory: digital heritage must be recognized as an essential aspect of cultural heritage, encompassing all digitized materials of lasting value that need to be preserved for future generations. The digitization of intangible cultural heritage is seen as a form of "expanded transmission," enabling the recording and dissemination of knowledge, skills, and cultural practices that were traditionally passed down orally and through direct practice.

Regarding research methodology, this paper adopts a qualitative research approach, combining a literature review and case study analysis. Firstly, we compiled studies, reports, and articles from both domestic and international

sources related to digital transformation in the field of cultural heritage and traditional arts. Fundamental concepts such as “digital transformation,” “digital heritage,” and the application of VR/AR, AI, and Big Data in culture were analyzed based on UNESCO documents and recent academic works to construct the theoretical framework for the study. Subsequently, we selected several notable case studies for in-depth analysis: (i) examples from Ho Chi Minh City and Southern Vietnam involving Đờn ca tài tử and Cải lương, focusing on ongoing digitalization projects and technology applications; and (ii) international case studies from South Korea, Japan, and Europe - regions where the digitalization of performing arts heritage has achieved remarkable successes. Information collected from conference reports, expert interviews, and specialized media was cross-referenced and thematically analyzed. We categorized technology applications into three main groups (VR/AR, AI, Big Data) for comparison and contrast. Finally, based on the analytical results, the paper identifies challenges and proposes a digital transformation model suitable for Vietnam’s context, referencing international experiences and local realities.

3. APPLICATION OF DIGITAL TECHNOLOGIES IN THE EXPLOITATION OF TRADITIONAL PERFORMING ARTS

The application of digital technologies in the exploitation of traditional performing arts can be examined from multiple perspectives. Each technology group offers different methods to utilize, experience, and preserve traditional arts. Additionally, we analyze the roles of artisans, audiences, and the technologies themselves within the digital art ecosystem, aiming to understand the interactive relationship between humans and technology throughout this transformation process.

3.1 Virtual Reality (VR) and Augmented Reality (AR) Technologies

In the context of digital transformation, VR and AR are gradually becoming powerful tools for reconstructing and disseminating traditional performing arts heritage. VR creates fully digital immersive performance spaces, while AR overlays digital information onto reality, allowing users to interact simultaneously with both the physical world and digital content. These technologies open up dynamic possibilities for re-creating traditional performances, which inherently depend on specific spatial and audience contexts, thereby helping art forms like Đờn ca tài tử and Cải lương transcend the limitations of physical stages and reach broader domestic and international audiences (Champion, 2015).

In Vietnam, the application of VR/AR to traditional arts remains relatively new but shows promising initial steps. Proposals such as VR experiences that re-create Đờn ca tài tử performances on the southern waterways or digital Cải lương museums integrated with AR demonstrate innovative approaches. Pilot projects like 360-degree video recordings of artisans performing, presented within VR environments, enable viewers not only to “watch” but to actively “participate” in the folk music space. In museums, AR technology can transform static artifacts (such as costumes and musical instruments) into dynamic triggers for video performances of Cải lương, creating a lively experience tailored to the visual reception habits of younger audiences.

Internationally, VR/AR technologies have been successfully applied in preserving the performing arts heritage in many countries. China has developed VR systems to reconstruct traditional theatrical performances within historical sites, combining tangible and intangible heritage. South Korea has built a virtual museum for court music, while Japan uses AR in theaters to provide overlays of costume explanations or real-time subtitles on smart glasses. These models demonstrate that technology not only re-creates performances but also deepens the connection between audiences and the cultural contexts of performance heritage (Jiang, 2024).

3.2 Artificial Intelligence (AI)

AI is emerging as an effective tool in the preservation and dissemination of intangible cultural heritage, particularly traditional performing arts such as Đờn ca tài tử and Cải lương. With its natural language processing capabilities, AI can translate, transcribe, and interpret traditional lyrics that often contain strong elements of regional dialects, metaphors, and historical references, thereby making them more accessible to modern audiences. UNESCO has recognized the effectiveness of using AI to translate ancient proverbs in Morocco as an example of expanding the communication reach of heritage. Similarly, AI in Vietnam could assist in translating Cải lương lyrics into English or creating virtual assistants to explain storylines and traditional structures for international audiences in digital performances.

Beyond text and language processing, AI can also support the restoration and creative reproduction of artistic content. Machine learning algorithms can remove noise from old audio recordings, enhance the resolution of vintage video footage, and even colorize black-and-white films of traditional Cải lương performances. Some systems can reconstruct artisan voices or recreate sounds of traditional instruments based on learned datasets, offering valuable

tools for teaching and preserving in contexts where physical resources are scarce. However, these applications also raise ethical challenges, as AI-generated “creations” based on oral tradition data might fail to properly credit source communities - an issue that must be addressed through appropriate legal frameworks (UNESCO, 2022).

Moreover, AI can optimize communication strategies for traditional arts on digital platforms. By analyzing Big Data related to user behavior, AI can suggest content that matches audience preferences, identify potential audience segments, and assist art management organizations in adjusting their messaging, formats, and timing for more effective outreach. Nevertheless, training AI on non-diverse datasets could result in algorithmic bias, potentially overlooking certain heritage types or cultural regions. Therefore, experts recommend that AI development in this field should be inclusive, respect indigenous knowledge, and involve heritage-holding communities throughout the design, implementation and monitoring processes.

3.3 Big Data and Digital Museums

The advancement of digital technology has opened up opportunities for the collection and exploitation of vast volumes of cultural and artistic data, leading to the emergence of the concept of “heritage Big Data”. In the field of traditional performing arts, Big Data encompasses performance recordings, artisan profiles, stage imagery, audience feedback, and other related cultural expressions. Building a unified digital database not only supports conservation efforts but also creates a foundation for developing new teaching methods, research activities, and innovative dissemination forms. Vietnam is actively promoting this strategy through its national digital transformation plan for the cultural sector, aiming to integrate digital heritage archives from localities and practitioner communities.

A prominent trend is the construction of digital museums that store and display performing arts heritage on online platforms. Projects such as “Heritage Connection” in Vietnam and the Europeana platform in the EU are exemplary community-centered digital ecosystems. Digital museums do not merely present information; they allow users to interact and explore heritage through multimedia formats such as 3D images, performance videos, and memory maps. Models like “Digital Cải lương” in Ho Chi Minh City or the digital museum of Bac Lieu province demonstrate that heritage digitization goes beyond storage - it activates cultural experiences and fosters sustainable cultural tourism powered by technology.

Big Data also opens new research directions for traditional arts. Sound data analysis helps identify motifs in folk music, while mining thousands of social media comments enables insights into audience preferences and informs the adaptation of artistic products. More importantly, Big Data can support emergency preservation, especially for endangered art forms. According to the EU-funded WEAVE project, building a “digital lifecycle” for intangible heritage facilitates systematic recording, storage, restoration, and revival of heritage, while ensuring the proactive participation of heritage-holding communities. Thus, establishing a national data portal that aggregates digitalization projects from local areas would create a powerful resource for the conservation and creative development of performing arts heritage in Vietnam’s digital era.

4. INTERNATIONAL EXPERIENCES AND PROPOSED IMPLEMENTATION MODEL

4.1 Experiences from Selected Countries

Several countries have successfully implemented digital transformation models in the field of performing arts heritage, demonstrating effective integration of technology, policy, and cultural creativity. In South Korea, the government plays a leading role by establishing heritage documentation centers equipped with modern technologies such as VR/AR, open databases, and mobile applications. The National Intangible Heritage Center (NIHC) in Jeonju is a notable example, recording, digitizing, and disseminating hundreds of traditional performances online each year. At the same time, South Korea actively renews heritage communication formats by integrating traditional cultural elements into video games, animated films, K-pop music, and other youth-oriented media, showing that technology and tradition can complement each other effectively.

Japan, by contrast, emphasizes strict preservation and authenticity in its digitization efforts. The country has built specialized databases for art forms such as Noh, Kabuki, and Bunraku through dedicated libraries and digital museums. Initiatives like recording performances using 8K video technology, surround sound systems, and experimenting with 3D holograms to recreate deceased artists illustrate Japan's deep investment in enhancing visual and auditory experiences, allowing audiences to perceive traditional arts as if attending in person. The key lesson from Japan is the persistent standardization and quality enhancement of digitalization efforts, combined with the use of cutting-edge technologies to revive the original spirit of the stage.

Meanwhile, Europe stands out with its open-minded and community-centered approach. Projects like Europeana and WEAVE emphasize the role of communities in sharing and preserving heritage through digital data. Many countries organize “heritage digitization days”, inviting citizens to contribute artifacts, photographs, and videos of traditional arts, which are then tagged, archived according to standards, and shared publicly. The standardization of metadata, the use of open formats, and cross-platform integration help ensure that heritage data is highly interoperable, easily accessible, and globally disseminated. Moreover, translation efforts and open licensing (Creative Commons) facilitate vibrant and sustainable educational, research, and creative activities based on heritage content.

Overall, successful countries clearly demonstrate three key factors: Strong and long-term policy support (South Korea); Deep investment in technology and user experience (Japan); Cultural data management oriented toward openness, comprehensiveness, and community participation (Europe). These experiences provide valuable lessons for building an effective digital transformation model, aiming towards a vibrant and sustainable ecosystem for traditional performing arts heritage in the global digital environment.

4.2 Proposed Implementation Model

Based on theoretical analysis and international experiences, we propose several orientations for building an effective digital transformation model in the field of traditional performing arts, with a focus on Ho Chi Minh City - the cultural and technological hub of Vietnam.

First, establish a multi-stakeholder cooperation model involving the government, artisans, technology enterprises, and the community. The government should play a role in policy-making and financial support; artisans provide authentic content; technology enterprises supply technological solutions (VR/AR, AI,...); and the community acts as co-creators and disseminators. This model can be implemented through public-private partnerships (PPP), where all parties share resources and benefits, creating a sustainable synergistic force.

Second, develop specialized digital infrastructure and platforms for traditional performing arts. Accelerating the establishment of a national heritage database is necessary, while at the local level, Ho Chi Minh City should create a dedicated portal integrating data on Đờn ca tài tử, Cải lương, and other traditional performing arts forms. In addition, mobile applications integrating VR/AR can offer immersive experiences and interactive content engagement, thereby attracting young users and international visitors.

Third, enhance digital competencies for cultural and artistic personnel. Specialized training and capacity-building programs on digital technologies should be widely implemented in theaters, museums, and art schools. Encouraging youth volunteer groups to assist elderly artisans in the digitization of heritage is also a necessary direction, contributing to strengthening intergenerational connections in the journey of preserving and innovating heritage.

Fourth, encourage the creation of digital content based on heritage. Policies supporting technology development, public commissions, and digital media contests can stimulate community creativity in producing new content from traditional materials, including documentaries, podcasts, interactive games, and social media campaigns. Honoring pioneering artists who apply technology also contributes to building a positive image and driving a shift in mindset within the arts sector.

Fifth, promote international cooperation in digital heritage transformation. Vietnam should actively participate in global networks such as UNESCO, ICHCAP, and regional digital heritage projects. Exchanging experts, learning from international models, and participating in common open data platforms will enhance capacities, update technologies, and promote the global dissemination of Vietnam's cultural heritage.

In summary, digital transformation in traditional performing arts heritage is a complex process requiring a systematic, multidisciplinary, and sustainable approach. Ho Chi Minh City is well-positioned to pioneer this model, laying the foundation for its replication across other localities and contributing to building a vibrant digital cultural environment where traditional heritage remains dynamic, adaptable, and thriving in the new era.

5. CONCLUSION AND RECOMMENDATIONS

Digital transformation in the field of traditional performing arts is not merely a technological trend but a proactive and creative strategy for the preservation and promotion of intangible cultural heritage. Technologies such as VR/AR, AI, and Big Data are opening new approaches, helping to restructure performance spaces, broaden audience experiences, and activate community participation in heritage governance. The practices in Ho Chi Minh City, along with international lessons from South Korea, Japan, and Europe, demonstrate the significant potential when stakeholders collaborate through strategic investment mechanisms and innovative thinking.

In the digital age, heritage must not only be preserved but also revitalized and shared. Building a comprehensive digital transformation model for traditional arts -covering infrastructure, content, human resources, and policies - is a prerequisite for preserving cultural values and effectively harnessing the potential of sustainable cultural tourism. Ho Chi Minh City is fully capable of becoming a pioneering model, setting the momentum for broader dissemination and ensuring that traditional performing arts heritage continues to shine within the global digital cultural space.

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