

DIGITAL TRANSFORMATION IN THE PRESERVATION OF KHMER ETHNIC CULTURE IN SOC TRANG PROVINCE, VIETNAM

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ABSTRACT

In the context of digital transformation taking place rapidly across the globe, the preservation and promotion of ethnic minority cultural values face both new opportunities and new challenges. In Soc Trang Province, Vietnam, home to a large Khmer community, traditional cultural values such as language, festivals, pagoda architecture, performing arts, and folk knowledge are confronting the risk of deterioration. This article focuses on analyzing the role of digital transformation in the preservation of Khmer ethnic culture, including the digitization of heritage data, the application of information technology in cultural promotion, and the development of digital platforms serving education and communication. Based on an assessment of the current situation in Soc Trang, the article identifies limitations in technological infrastructure, human resources, and policy mechanisms, while proposing several solutions to enhance the effectiveness of digital transformation applications in the preservation and promotion of Khmer cultural values in the coming period.

Keyword: *Digital transformation, Khmer culture, cultural preservation, Soc Trang Province, heritage digitization, information technology.*

1. INTRODUCTION

In the era of the Fourth Industrial Revolution, digital transformation has become an inevitable trend, exerting profound impacts on all aspects of socio-economic life, including the cultural sector. The application of digital technology not only contributes to improving the efficiency of managing, archiving, and disseminating cultural heritage, but also opens up new approaches that enable traditional cultural values to be more widely diffused within the community.

Soc Trang Province, Vietnam is one of the localities with a large Khmer population, possessing a rich and distinctive cultural repository manifested through the Khmer pagoda system, traditional festivals such as Chol Chnam Thmay and Ok Om Bok, the theatrical arts of Dù Kê and Rô Băm, along with many invaluable folk knowledge traditions. However, under the impact of urbanization and international integration, many Khmer cultural values are at risk of being lost if appropriate preservation measures are not taken.

In this context, digital transformation is regarded as an effective instrument for preserving,

restoring, and sustainably promoting the cultural values of the Khmer ethnic group. Nevertheless, the implementation of digital transformation in this domain in Soc Trang remains limited and has yet to fully exploit its potential. Therefore, research on digital transformation in the preservation of Khmer culture in Soc Trang Province holds significance both theoretically and practically, contributing to the proposal of appropriate solutions for safeguarding and promoting ethnic cultural identity in the digital age.

2. THEORETICAL FRAMEWORK

Digital transformation in the cultural sector is understood as the process of applying digital technology to comprehensively transform the methods of storing, preserving, managing, and disseminating cultural values. Beyond mere data digitization, digital transformation also encompasses the restructuring of cultural activities toward technology integration, enhancing public accessibility and interaction. In this context, cultural preservation is no longer a "static preservation" activity but transitions to "dynamic preservation," in which cultural values are recreated, disseminated, and developed within

the digital environment. Decision No. 611/QD-TTg of the Prime Minister, approving the Project on "Digital Transformation in the Cultural Sector through 2030, with a Vision to 2045," has also emphasized that digital transformation in the cultural sector is the foremost breakthrough to expand the space for creativity, serving as the primary driver for developing modern productive forces, perfecting production relations, and innovating governance methods for cultural activities in the digital environment.

Theoretically, this study is approached on the basis of several key foundations. First, the theory of cultural heritage preservation emphasizes the role of maintaining the authenticity and core values of heritage while allowing adaptation to the modern social context. Second, the theory of digital transformation holds that digital technology is not merely a supporting tool but also a factor driving innovation in models of cultural management and value exploitation. Third, the sustainable development approach regards culture as an important pillar that must be preserved in parallel with economic development and environmental protection.

Drawing on the aforementioned theoretical foundations, the analytical framework of this study focuses on the relationship between digital transformation and the effectiveness of Khmer ethnic cultural preservation through several key factor groups. First, digital technological infrastructure, encompassing database systems, digital platforms, and equipment for digitization. Second, human resources, reflected in the level of information technology competency among cultural management officials and local communities. Third, policy mechanisms, including legal regulations and governmental support in promoting digital transformation. Fourth, the degree of community participation, particularly the role of the Khmer people in preserving and transmitting cultural values. Finally, applied technology factors, such as artificial intelligence, virtual reality, and augmented reality in recreating and promoting heritage.

3. CURRENT STATE OF DIGITAL TRANSFORMATION IN THE PRESERVATION OF KHMER ETHNIC CULTURE IN SOC TRANG PROVINCE

3.1. Achievements in Digital Transformation for the Preservation of Khmer Ethnic Culture in Soc Trang Province

In recent years, Soc Trang Province has achieved a number of initial results in implementing digital transformation in conjunction with the preservation and promotion of Khmer ethnic cultural values. Although not yet comprehensive, these results have established an important foundation for development in the subsequent period. First and foremost, the digitization of cultural heritage has received attention and been implemented. Numerous activities involving the collection, archiving, and conversion of data on Khmer culture into digital form have been carried out. Traditional festivals such as Chol Chnam Thmay, Ok Om Bok, and Sene Dolta have been filmed, photographed, and stored as digital documentation. Concurrently, distinctive art forms such as Dù Kê and Rô Băm have also been digitized through video recordings, contributing to the preservation of intangible cultural values at risk of deterioration. This represents a significant step forward in ensuring that heritage preservation is not entirely dependent on traditional forms of transmission. Second, the application of information technology in cultural management and promotion has undergone positive transformation. Local cultural management agencies have progressively utilized websites, electronic information portals, and social media platforms to introduce Khmer cultural values to the public. A number of traditional festivals have been organized in conjunction with live-streaming formats, thereby expanding the scope of access, particularly in the context of the rapid development of digital technology and the growing demand for online information access. Third, awareness of the role of digital transformation in cultural preservation has been enhanced. Local authorities and relevant agencies have begun to recognize the importance of applying digital technology in preserving and promoting Khmer ethnic cultural values. This is reflected in the integration of digital transformation content into the province's cultural and social development programs and plans, as well as the gradual implementation of cultural data digitization activities. Fourth, certain cultural institutions have begun to apply technology in exhibition and archiving activities. Museums and cultural centers have adopted artifact management software and constructed

basic electronic databases, contributing to improved efficiency in information management and utilization. Some Khmer cultural tourism sites have also begun applying technology to provide visitors with information through QR codes or online platforms. Fifth, media and educational activities related to Khmer culture in the digital environment show signs of development. A number of content pieces related to the language, customs, and festivals of the Khmer people have been widely shared on digital platforms, contributing to raising community awareness, particularly among younger generations. This has helped to forge a connection between tradition and modernity, thereby contributing to the maintenance of cultural identity in the context of integration. Overall, the achievements recorded indicate that digital transformation in the preservation of Khmer culture in Soc Trang Province has made positive initial strides, laying the groundwork for expansion and improved effectiveness in the coming period. However, these results remain preliminary and are not yet commensurate with the existing potential, necessitating more synchronized and strategic investment in the next phase.

3.2. Limitations and Shortcomings in Digital Transformation for the Preservation of Khmer Ethnic Culture in Soc Trang Province

Alongside the initial results achieved, the process of digital transformation in the preservation of Khmer ethnic culture in Soc Trang Province continues to face numerous systemic limitations and inadequacies. These limitations stem not only from technological factors but also from institutional constraints, resource deficiencies, and the degree of community participation.

First and foremost, the most significant limitation lies in the non-synchronized digital technological infrastructure with considerable gaps, particularly in rural areas where the majority of the Khmer population resides. Although telecommunications infrastructure has been improved, the quality of internet connectivity in certain areas remains unstable, with low access speeds, creating difficulties for the deployment of high-capacity digital applications such as high-definition video, virtual reality, and online databases. In addition, specialized equipment for heritage digitization such as 3D scanners, professional filming devices, and large scale data storage systems remains insufficient or inadequately invested in, resulting

in substandard digitization quality and a lack of sustainability.

Second, cultural heritage digitization remains fragmented, unsystematic, and has yet to achieve the necessary depth. The majority of current digitization activities are primarily limited to filming, photographing, and storing documents in discrete digital formats, without forming a centralized, structured digital database capable of integration and interoperability among units. This has led to data dispersion, difficulty in utilization, and failure to realize the full value of data in research, education, or tourism development. Furthermore, digitization has not been accompanied by data standardization, and the absence of common technical standards creates difficulties for long-term sharing and use.

Third, the application of advanced digital technologies in cultural preservation remains extremely limited. Technologies such as artificial intelligence AI, virtual reality VR, and augmented reality AR, which hold considerable potential for recreating cultural spaces and enhancing user experience, have yet to be systematically deployed. Existing digital products are primarily unidirectional in nature, providing information without interactivity and failing to generate sufficient appeal for users, particularly younger generations. This reduces the effectiveness of digital transformation in disseminating and revitalizing Khmer cultural values within the modern environment.

Fourth, the human resources available for digital transformation are deficient in both quantity and quality. The majority of local cultural officials have not received specialized training in information technology, resulting in limitations in implementing digitization activities, managing data, and developing digital cultural products. At the same time, individuals with in depth knowledge of Khmer culture such as artisans, monks, and elderly community members face difficulties in accessing and utilizing digital technology. The shortage of human resources capable of bridging the gap between culture and technology has become a major barrier to the digital transformation process.

Fifth, policy mechanisms and investment resources for digital transformation in the cultural sector remain limited and lack long-term orientation. Currently, there is no distinct,

comprehensive strategy for digital transformation in the preservation of Khmer culture in Soc Trang. Activities are primarily integrated into general development programs, resulting in a lack of focus and the absence of clear prioritization. Funding for heritage digitization remains constrained and heavily dependent on state budgets, while resources from the private sector, social organizations, and international cooperation have yet to be effectively mobilized. This renders digital transformation projects typically short-term in nature and lacking in sustainability.

Sixth, the level of participation by the Khmer community in the digital transformation process remains low. Although the community is the creative subject and custodian of culture, in practice, its members have not been actively engaged in the process of digitization and digital content development. The population largely plays the role of information provider or participant in filming activities, while no mechanism exists for their direct involvement in constructing, managing, and utilizing digital cultural products. This not only diminishes the authenticity and vitality of digital data but also affects the sustainability of preservation activities.

Seventh, the linkages among relevant stakeholders remain loose and ineffective. The digital transformation process in cultural preservation requires close coordination among state management agencies, cultural units, technology enterprises, and local communities. However, in Soc Trang, this coordination remains limited, with effective public-private partnership models largely absent. Technology enterprises have not yet engaged substantively in the cultural sector, while management agencies lack mechanisms to attract and facilitate such cooperation.

Eighth, the effectiveness of exploiting and promoting Khmer cultural values on digital platforms remains low. Existing digital products are not yet closely integrated with other sectors such as tourism, education, or the cultural industries. Economic models based on digital cultural assets have yet to be established, meaning that digital transformation has not generated discernible added value. Furthermore, the absence of a system of criteria and indicators for evaluating the effectiveness of digital transformation in the cultural sector makes monitoring, assessment, and policy adjustment considerably difficult.

Overall, the aforementioned limitations indicate that digital transformation in the preservation of Khmer ethnic culture in Soc Trang Province continues to face fundamental challenges. Addressing these shortcomings requires a synchronized approach encompassing infrastructure improvement, human resource quality enhancement, policy mechanism reform, and strengthened community participation, thereby establishing a solid foundation for the preservation and promotion of Khmer culture in the digital age.

4. SOLUTIONS FOR PROMOTING DIGITAL TRANSFORMATION IN THE PRESERVATION OF KHMER ETHNIC CULTURE IN SOC TRANG PROVINCE

On the basis of the achievements attained and the limitations that persist, the promotion of digital transformation in the preservation of Khmer ethnic culture in Soc Trang Province must be implemented in a synchronized, focused, and long-term manner. The proposed solutions must not only concentrate on technology but also encompass institutional factors, human capital, and community participation.

First, the completion of digital technological infrastructure and data platforms is a prerequisite. The province must accelerate investment in upgrading telecommunications infrastructure, particularly in areas with large Khmer populations, in order to ensure stable and high speed internet access. Concurrently, a centralized digital database system on Khmer culture, encompassing both tangible and intangible heritage, must be constructed and standardized according to unified technical specifications. This system must possess interoperability among management agencies, museums, libraries, and research organizations, thereby facilitating long term data storage, utilization, and sharing. In addition, the application of cloud computing and data security solutions must be prioritized to ensure information security and the sustainability of the system.

Second, the acceleration of heritage digitization must be coupled with data standardization and exploitation. Digitization activities must be implemented systematically, extending beyond mere collection and storage toward the construction of "living digital datasets" that can be

updated, interacted with, and utilized for multiple purposes. Priority must be given to digitizing categories of heritage at high risk of deterioration, such as traditional performing arts, the Khmer language, and folk knowledge. Simultaneously, standards for data formats, digitization procedures, and data management must be established to ensure consistency and long-term usability. Linking digitization with exploitation, such as the development of digital tourism products, digital educational materials, and digital media content, will contribute to increasing the value of heritage.

Third, the enhanced application of advanced digital technologies in cultural preservation and promotion is essential. The province must progressively deploy technologies such as artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) to recreate Khmer cultural spaces in a vivid and engaging manner. For instance, a virtual museum of Khmer culture could be constructed, enabling users to visit Khmer pagodas or experience traditional festivals within a digital environment. AI can be applied to the recognition, translation, and preservation of the Khmer language, while AR can assist visitors in accessing information about heritage sites on-site. The development of highly interactive digital products will contribute to attracting younger generations and enhancing the effectiveness of cultural communication.

Fourth, the development of human resources for digital transformation constitutes a foundational solution. Training and capacity-building programs in information technology and digital transformation skills must be organized for local cultural officials. Simultaneously, the training of "interdisciplinary" human resources capable of integrating cultural knowledge with technological competency must be encouraged. For the Khmer community, guidance and support programs aimed at enhancing digital skills must be established to enable active participation in the processes of digitization and cultural content creation. Mobilizing the involvement of artisans and culturally knowledgeable individuals in the digitization process will contribute to ensuring the accuracy and authenticity of heritage.

Fifth, the refinement of policy mechanisms and the strengthening of investment resources are necessary. Soc Trang Province must formulate a dedicated strategy for digital transformation in

the cultural sector, clearly identifying objectives, roadmaps, and priority tasks. Concurrently, policies encouraging socialization and attracting the participation of technology enterprises, research organizations, and communities in the preservation of culture through digital transformation must be enacted. The diversification of investment capital sources, including resources from the private sector and international cooperation, will contribute to ensuring the sustainability of digital transformation projects.

Sixth, the strengthening of community participation by the Khmer people in the digital transformation process is imperative. The community must be regarded as the central subject, not only in the provision of data but also in the creation, management, and utilization of digital cultural products. Mechanisms must be developed to encourage the public to contribute digital content, share folk knowledge, and participate in cultural promotion activities on digital platforms. Promoting the role of the community will help ensure the authenticity, vitality, and sustainability of cultural preservation activities.

Seventh, strengthened linkages and cooperation among relevant stakeholders are required. Digital transformation in cultural preservation demands close coordination among state management agencies, cultural units, educational institutions, technology enterprises, and communities. The province must promote public-private partnership (PPP) models, creating conditions for enterprises to participate in the development of digital cultural products. Simultaneously, cooperation with both domestic and international organizations must be expanded in order to learn from experience, access new technologies, and enhance implementation capacity.

Eighth, digital transformation must be linked with tourism development and the cultural economy in order to enhance the effectiveness of heritage exploitation. Digital cultural products must be integrated into tourism, education, and media activities, generating added value and contributing to local economic development. The construction of digital tourism tours, intelligent guide applications, and online learning platforms on Khmer culture will help expand markets and enhance the appeal of local culture in the context of integration.

5. CONCLUSION

In the context of digital transformation becoming an inevitable trend of the era, the application of digital technology to the preservation and promotion of Khmer ethnic cultural values in Soc Trang Province holds particular importance both theoretically and practically. The study demonstrates that, in recent years, the locality has begun implementing a number of digital transformation activities, including the digitization of cultural documentation, the application of information technology in promotion, and the enhancement of awareness regarding the role of technology in heritage preservation. These results have contributed to establishing an initial foundation for transitioning the mode of cultural preservation from traditional to modern approaches. Nevertheless, the implementation process continues to face numerous limitations, manifested in the non-synchronization of technological infrastructure, the fragmented nature of digitization activities, the constrained application of advanced technologies, inadequate human resources, as well as deficiencies in policy mechanisms and the level of community participation. These shortcomings indicate that digital transformation in the preservation of Khmer culture in Soc Trang remains in its initial stage and requires more strategically oriented steps going forward. On this basis, the article has proposed a comprehensive system of solutions encompassing the improvement of technological infrastructure, the acceleration of digitization linked with data exploitation, the application of advanced technologies, human resource development, the refinement of policy mechanisms, the strengthening of community participation, and the promotion of linkages among relevant stakeholders. Simultaneously, linking digital transformation with tourism development and the cultural economy is regarded as an important direction for enhancing the value and sustainability of preservation activities. It can be affirmed that digital transformation is not merely a supporting instrument but also a significant driving force for preserving and disseminating Khmer ethnic cultural values in the context of integration and development. To achieve long term effectiveness, the synchronized engagement of government authorities, enterprises, social organizations, and in particular the Khmer community, as the creative subject and custodian

of heritage, is indispensable. In the future, if implemented in a systematic and effective manner, digital transformation will make a significant contribution to the preservation, promotion, and elevation of Khmer cultural values, thereby positively contributing to the sustainable development of Soc Trang Province in particular and Vietnam in general.

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