

Employing Digital Technologies to Preserve Heritage and Enrich Contemporary Cultural Identity: Insights from a Digital Archive of Communal Hall Relics in Vietnam

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Abstract

Recent discussions in heritage studies emphasize the urgent need for innovative approaches that combine preservation with cultural regeneration. The continuous deterioration of cultural heritage has become a global concern, and Vietnam is no exception. Vietnamese communal halls (đình làng), which serve as cultural and spiritual centers of local communities, are now facing severe degradation due to time, urbanization, and inadequate restoration efforts. This paper investigates how digital archiving can safeguard and revitalize both tangible and intangible values of communal hall heritage, contributing to the preservation of Vietnamese cultural identity and offering insights for heritage management in the digital era.

The study adopts a qualitative case study approach, focusing on the decorative arts of selected exemplary communal halls in Northern Vietnam in 2014. Data was collected by a team of experts from the vr3d.vn project through 3D scanning, high-resolution photography, field observations, and archival research, complemented by interviews with local artisans and heritage custodians. These digital materials were analyzed to decode traditional motifs and patterns, revealing their cultural meanings. By integrating digital documentation with interpretive design analysis, the study shows how digitized data can be transformed into active resources for cultural and creative practices, providing a methodological reference for future heritage digitization projects.

The findings indicate that digital preservation extends beyond technical archiving to become a methodological bridge between heritage conservation and cultural industry development. Through digital re-interpretation, communal hall heritage can be revitalized as a living source of inspiration for contemporary design and identity formation. The study concludes that digitization is not merely a tool for safeguarding the past but a creative catalyst that connects tradition with innovation, offering practical guidance for the sustainable preservation and promotion of Vietnamese heritage in national and international contexts.

Keywords: Digital Preservation, Vernacular Heritage, Vietnamese Communal Hall, Cultural Identity, Contemporary Design, Symbolism

Introduction

In the contemporary digital era, networks and intelligent systems have become pivotal across diverse sectors such as transportation, healthcare, education, industry, and culture. Within the realm of arts and heritage preservation, digitization emerges not only as a technological solution but also as a significant advancement that facilitates the safeguarding and promotion of the artistic heritage of Vietnam. The application of digital technologies in preserving cultural relics represents a crucial step toward comprehensive and vivid conservation of village communal houses, which are emblematic architectural and cultural landmarks in Vietnam. This approach holds substantial promise in delivering multifaceted benefits, encompassing economic advantages and the enhancement of heritage preservation, thereby contributing to the promotion of cultural and artistic values integral to national history and identity.

Vietnamese village communal houses known as *đình làng* trace their origins back to approximately the 15th century, with their establishment consolidated during the 16th century and flourishing in the late 17th to early 18th centuries, followed by a gradual decline in the 19th century. Notably, the Lê and Nguyễn dynasties witnessed extensive restoration and revitalization efforts nationwide. These communal houses transcend their physical structures, embodying profound social, cultural and spiritual significance within the Vietnamese communities. However, the forces of modernization and urbanization pose substantial challenges to their preservation. These include natural degradation, inadequate funding, unprofessional restoration interventions, loss of cultural authenticity, and weaknesses in management and protection frameworks. Addressing these challenges necessitates coordinated efforts among the governmental bodies, researchers, and local communities to ensure sustainable preservation strategies.

The recent amendment to the Archiving Law, ratified by the National Assembly on June 21, 2024, explicitly incorporates the concept of digitization. Clause 12, Article 2 of the draft law defines the digital archive database as a systematically organized collection of essential archival documents designed for electronic access, management, exploitation, sharing, and updating. This legislative integration underscores the growing recognition of digital archiving as a national imperative aligned with current technological and societal developments. Accordingly, digitization emerges as an urgent and indispensable task in the preservation of the village communal houses of Vietnam, offering a robust framework for safeguarding cultural heritage in the digital age.

In this context, this research examines the Digital Archive of communal hall relics in Vietnam. Its aim is to contribute to a more holistic understanding of how digital heritage practices can sustain vernacular identity in the contemporary society. Its objectives are as follows.

1. To identify the digital technologies available and suitable to preserve heritage;
2. To map the process that can be adapted in digitization of cultural heritage;
3. To present a comprehensive framework for digitizing village communal houses, of Vietnam integrating advanced technologies such as 3D scanning and multispectral imaging with community engagement and educational applications.

Theoretical Framework

Preservation of cultural heritage has long been explored through the perspectives of culture, design, and archival theory. Rapoport (1969) notes that “culture is the total equipment of ideas, institutions, and conventionalized practices.” This view is vividly illustrated by Vietnamese communal halls, which function not merely as physical structures but also as repositories of social knowledge, spiritual values, and unique artistic traditions within their communities.

Heritage studies have expanded from a focus on material conservation to include intangible values such as rituals, symbolism, and craftsmanship. According to Smith (2006), heritage should not be seen merely as “old, grand, and monumental,” but rather as a cultural process through which societies create and negotiate meanings. She introduces the concept of

the Authorized Heritage Discourse (AHD), a hegemonic narrative that privileges Western elite values and monumental aesthetics while marginalizing local, community-based, and vernacular understandings of heritage. This perspective is crucial in the Vietnamese context, where communal halls embody both tangible and intangible cultural practices that challenge dominant notions of heritage. Similarly, Lowenthal (1985) emphasizes that heritage shapes collective identity through ongoing reinterpretations of the past, suggesting that preservation is as much a social process as it is a technical one.

Within this discourse, design theory bridges traditional craftsmanship and contemporary creativity. In this regard, Cross (2006) defines design as a distinctive form of human knowledge: “designerly ways of knowing”—that connects making, meaning, and innovation. Buchanan (1992) likewise conceives design as a process of cultural problem-solving, embedding artistic practices within social and symbolic contexts. These perspectives support the view that heritage preservation should engage not only technical conservation but also creative reinterpretation.

In this context, digitization has emerged as a transformative paradigm linking traditional conservation with new technological applications. Addison (2000) defines virtual heritage as the use of digital media to document and visualize cultural artifacts, while Kalay, Kvan, and Affleck (2008) highlight how new media fosters interactive and participatory engagements with heritage. From an archival standpoint, Millar (2017) defines digital archives as systematic collections for long-term preservation and access. In Vietnam, the Amended Archiving Law (2024) institutionalizes digitization, defining digital archival databases as structured systems for managing and sharing records electronically.

Integrating these perspectives—culture as spatial expression, heritage as meaning-making, design as creative mediation, and digitization as cultural preservation—this study situates the Vietnamese communal hall within a multidisciplinary framework. It demonstrates how digital archives can function not only as technical repositories but also as interpretive and regenerative tools that revitalize vernacular heritage, support local identity, and challenge dominant discourses in the digital age.

Review of Literature

Preserving vernacular heritage amid modernization and urban transformation poses significant challenges both globally and in Vietnam. Previous studies on Vietnamese communal halls by Ha Van Tan and Nguyen Van Ku (1998) indicate that many architectural structures and decorative arts are gradually deteriorating due to environmental factors and inadequate restoration practices. This trend reflects a broader global concern noted by Smith (2006) and Lowenthal (1985), who argue that effective heritage preservation must balance authenticity, continuity, and adaptation in response to societal change.

In recent years, the application of digital technologies in heritage conservation has attracted growing attention. Research by Addison (2000) and Kalay, Kvan, and Affleck (2008) demonstrates that tools such as 3D scanning, high-resolution imaging, and digital modeling enable accurate documentation and virtual reconstruction of cultural assets. Similarly, Champion (2011) and Brumana et al. (2018) highlight that digital archives and visualization techniques can enhance both research accuracy and public engagement, transforming heritage into more accessible and interactive forms.

Despite these advances, key gaps remain in the literature. Most studies focus primarily on technical documentation, often neglecting interpretive, cultural, and community-oriented aspects of digitization. Few investigations explore how digital archives can foster local participation, cultural education, and identity reconstruction. In the Vietnamese context, research remains fragmented, with limited integration between digital preservation initiatives and traditional cultural practices.

Building upon recent policy developments, the importance of digitization has been formally recognized within Vietnam’s legal framework. During the National Assembly session on June 21, 2024, the revised Law on Archives introduced a definition of digital archival databases in Clause 12, Article 2 of the draft law.

It states:

“The archival database is a collection of master data of archival documents arranged and organized for access, exploitation, sharing, management, and updating through electronic means. The archival database includes paper archival data, data on other storage media, and digital archival data”

National Assembly of Vietnam, 2024, Clause 12, Article 2

This inclusion represents a significant institutional acknowledgment of digitization as an essential component of heritage and archival management, aligning with global digital transformation trends. Clearly, digitization has become an urgent and essential task in safeguarding communal halls and other vernacular heritage sites across Vietnam today.

This study addresses these gaps by combining digital documentation, interpretive design analysis, and expert consultation. Focusing on selected communal halls in Northern Vietnam, it examines how digitization can function not only as a tool for preservation but also as a medium for cultural regeneration and creative reuse. By adopting this integrated approach, the research contributes to a holistic understanding of how digital heritage practices can sustain vernacular identity in the contemporary society.

Research Methods

This study adopts a qualitative case study approach to explore how digital technologies can document, preserve, and reinterpret Vietnamese communal hall heritage. The research focuses on selected exemplary halls in Northern Vietnam, which showcase distinct architectural and artistic characteristics of vernacular design. Fieldwork was conducted in 2014 by experts from the VR3D.vn project, specializing in digital documentation of communal architecture.

Data collection combined multiple methods to ensure technical accuracy and cultural depth. 3D laser scanning and high-resolution photogrammetry captured structural details and decorative motifs, producing precise digital models of roofs, altars, and carved wooden elements. Field observations contextualized the architecture within its cultural setting, while archival research provided historical references. Moreover, semi-structured interviews with local artisans, heritage custodians, and residents documented oral knowledge, craft techniques, and symbolic meanings embedded in the halls.

Collected data were processed into a digital archive and analyzed through design interpretation and symbolic analysis to reveal cultural meanings in patterns, motifs, and spatial compositions. This qualitative approach bridges technical digitization and cultural understanding.

Findings

Current Status of the Preservation of Village Communal Houses in Vietnam

It is noted that preservation of village communal houses (đình làng) in Vietnam currently faces numerous challenges that have resulted in an unsatisfactory conservation status across many regions. These structures—once the cultural and spiritual nuclei of village life—have been subjected to natural decay, urban encroachment, and inconsistent management, leading to the gradual erosion of both their material integrity and symbolic meanings. Only a limited number of communal houses, such as Lau Thuong Communal House in Viet Tri City, Phu Tho Province, have been restored successfully in ways that respect historical authenticity and aesthetic values. However, the majority remain in alarming states of deterioration, highlighting a pressing need for more systematic preservation strategies.

One of the most persistent obstacles is the chronic shortage of financial and technical resources for restoration. Many communal houses, particularly those over a hundred years old, are in serious decline due to the effects of time, climate change, and environmental degradation. Traditional construction materials—wood, tiles, and earthenware—are vulnerable to humidity, flooding, and erosion, which gradually weaken the structural framework. Rural localities often lack the financial capacity to conduct timely maintenance, and the state budget allocated for heritage conservation is insufficient to meet the actual demands. Community-

based preservation efforts, while valuable, remain fragmented and dependent on unstable sources such as local donations and sporadic philanthropic aid. A typical example of this critical situation can be seen at the Do My Communal House in Ha Trung District, Thanh Hoa Province—a 200-year-old relic now at risk of collapse. Recently, the local authorities have had to reinforce the structure with bamboo scaffolding and restrict public access for safety reasons (Lao Dong Newspaper, 2024).



Fig. 1: Do My Communal House, Do My Village, Ha Tan Commune, Ha Trung District, Thanh Hoa Province
Source: Lao Dong Newspaper, 2024

Beyond financial and material constraints, the pressures of urbanization and social transformation have also reshaped the role of communal houses in contemporary village life. In fact, rapid modernization has altered traditional value systems, with younger generations increasingly drawn to urban lifestyles characterized by convenience and speed. As a result, communal cultural activities and rituals have become infrequent, often limited to incense offerings on the first and fifteenth days of each lunar month. Moreover, the spatial surroundings of many communal houses have been disrupted by unplanned constructions and loss of traditional landscapes, diminishing the Feng Shui harmony once integral to these sites. Cases of artifact theft, vandalism, and unregulated tourism further threaten their cultural and artistic integrity. The weakening of inter-generational connections and the gradual detachment of local communities from heritage practices have compounded the difficulty of sustainable preservation.

Equally concerning is the lack of professional expertise and scientific oversight in restoration activities. In many cases, restorations have been carried out by unqualified workers without consultation from heritage specialists, resulting in irreversible damage. A well-documented example is the Lương Xá Communal House in Ứng Hòa District, Hanoi—an important relic from the Lê Trung Hưng period—which has been restored in 2018 using reinforced concrete to replace traditional wooden structures, fundamentally altering its original character.

Similarly, at the Văn Xá Communal House in Hà Nam Province, the repainting of intricate wooden carvings depicting dragons, phoenixes, and lions from the 17th–18th centuries in bright colors irreparably compromised their artistic values. Other instances, such as at the Đồng Ky Communal House in Bắc Ninh Province and the Ngô Xá Communal House in Bắc Giang Province, also demonstrate inappropriate interventions that replaced original materials or changed architectural styles, diminishing both historical authenticity and cultural significance. These cases reveal the urgent need for stricter adherence to technical standards and legal frameworks outlined in Vietnam's Law on Cultural Heritage, as well as for professional supervision in all stages of restoration.

In addition to recognized national relics, many unclassified communal houses face even greater risks due to limited legal protection and administrative oversight. A considerable number of these sites meet the criteria for official classification but remain undocumented or unrecognized. Consequently, heritage management authorities must collaborate closely with the local governments to conduct comprehensive surveys, identify valuable relics, and compile classification dossiers in accordance with the national heritage regulations. Proactive

classification and documentation not only safeguard physical heritage but also enhance accountability, ensuring that timely interventions can be made before irreparable damage occurs.

Overall, the current preservation status of Vietnamese communal houses reflects a combination of material degradation, socio-cultural transformation, and institutional shortcomings. Addressing these intertwined challenges requires an integrated approach that combines professional restoration practices, community participation, legal enforcement, and—importantly—the adoption of digital technologies to document and protect these cultural assets for future generations.

Digitization and Its Importance in the Preservation of Village Communal Houses

Overview of Digitization in Heritage Preservation

Digitization has become a pivotal concept in the twenty-first century, referring broadly to the conversion of physical or analog materials into digital formats for storage, processing, and dissemination. Although its definitions vary across disciplines, international organizations such as the International Organization for Standardization (ISO) and the Institute of Electrical and Electronics Engineers (IEEE) have established widely accepted frameworks for digital processes, particularly in the fields of information management and preservation. From its origins in the 1950s with the advent of computing technologies to the global spread of the Internet in the 1970s, digitization has evolved from a technical process into a cultural and social phenomenon that reshapes how the societies preserve and engage with their heritage (Kalay, 2008; Smith, 2015).

In the context of Vietnam, digitization began to emerge in the late 1990s as part of the broader movement towards digital transformation in education, culture, and heritage management. In recent years, several pioneering projects have applied digital technologies to document and preserve architectural and artistic heritage, including village communal houses (*đình làng*)—the symbolic and spiritual nuclei of Vietnamese rural culture. Early initiatives include the 3D digitization of *Tiền Lê Communal House* and the digital documentation of the *Nghê* guardian sculptures at *Lâu Thượng Communal House* (VR3D, 2024). Other significant efforts encompass the digitization of the *Huế Imperial Heritage Complex*, 3D scanning at the *Museum of Cham Sculpture* in *Đà Nẵng*, and digital archives of folk sculptures and stele inscriptions at the *Tự Đức* tomb complex. These projects collectively mark a turning point in the application of digital technology to Vietnamese vernacular heritage, particularly in the preservation of wooden architecture, decorative arts, and ritual artifacts.

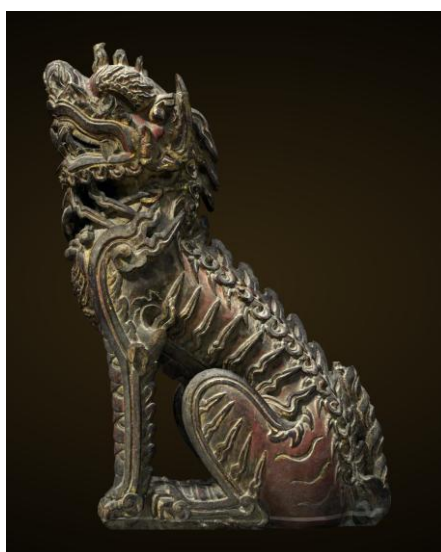


Fig. 2. Digital preservation of ancient dragon motifs at *Lâu Thượng Communal House*

Source: vr3d.vn, 2024



Fig 3: Cua vong at Lai Yen Communal House”
Source: vr3d.vn, 2024

Beyond technical documentation, digitization has demonstrated profound implications for cultural continuity, education, and community engagement.

1. It enables the preservation of artistic and architectural details—such as carvings, statues, inscriptions, and ritual objects—that are vulnerable to environmental and human degradation. High-resolution 3D models and digital archives ensure that the visual and symbolic values of these heritage assets are retained even if the originals deteriorate over time.
2. Digitization enhances accessibility for research and education. Digital databases allow students, scholars, and the general public to access accurate representations of heritage without geographical or temporal constraints. This has transformed teaching and learning practices, fostering new interdisciplinary approaches that combine art history, technology, and cultural studies (Jones & Yarrow, 2019).
3. Digital platforms support community participation in heritage preservation. Through online exhibitions, virtual tours, and social media engagement, local communities can reconnect with their cultural roots while contributing to the safeguarding and promotion of heritage. The digitization of village communal houses thus becomes not only a technical solution but also a cultural strategy for sustaining collective memory and strengthening cultural identity in the digital age (Rossi, 2019).

In summary, digitization serves as both a preservation mechanism and a cultural bridge, linking traditional heritage with contemporary creativity. By integrating technology, education, and community engagement, the digital preservation of village communal houses in Vietnam offers a dynamic pathway toward sustaining vernacular values within the evolving landscape of modern society.

Practical Applications of Digitizing Village Communal Houses

Building on the overview of digitization in heritage preservation, the practical applications of digital technologies in Vietnamese village communal houses (đình làng) demonstrate the transformative potential of these methods beyond documentation. While 3D scanning, high-resolution photography, and digital archiving ensure accurate records of architectural and artistic elements, their true impact lies in enabling new forms of interactions, interpretations, and cultural engagement.

Heritage Restoration and Conservation

Digitization facilitates precise analysis and restoration of communal houses. Detailed 3D models enable the specialists to examine structural components and decorative elements virtually, minimizing risks to fragile carvings or painted surfaces. For example, the 3D

digitization of the Tiên Lê Communal House and the virtual reconstruction of dragon motifs at Lâu Thượng Communal House (Figures 2–3) enabled conservation teams to plan interventions that respect historical authenticity while addressing material deterioration (vr3d.vn).

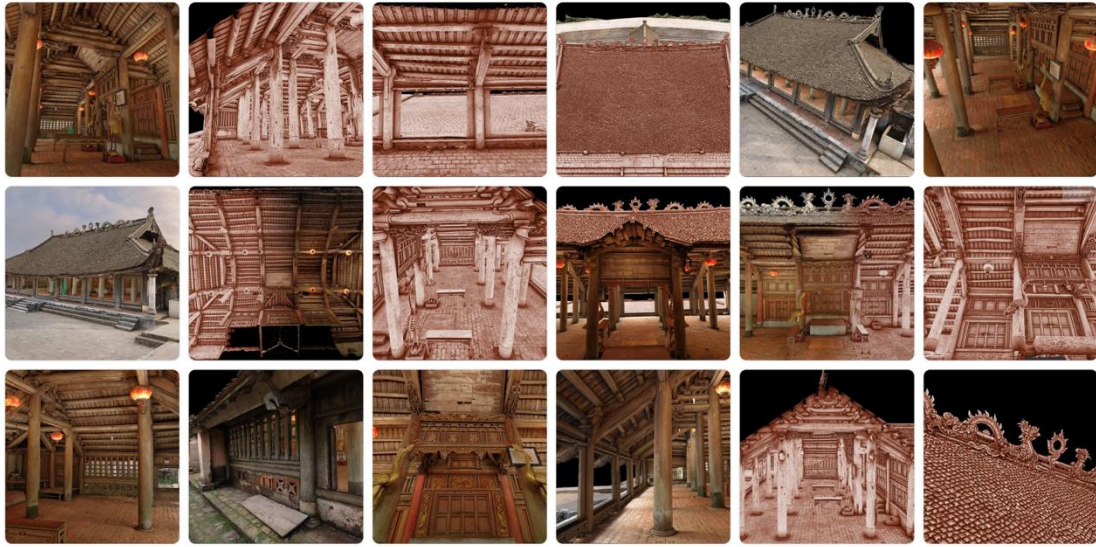


Fig 4: Tien Le Communal House
Source: vr3d.vn, 2024



Fig. 5: Tien Le Communal House
Source: vr3d.vn, 2016

Education and Research

In fact, digital archives provide unprecedented access for scholars, students, and the public. Interactive 3D models, annotated virtual tours, and online exhibitions allow comparative study of decorative arts, architectural styles, and ritual artifacts across different regions. For instance, the digitization of the Hue Imperial Heritage Complex and Cham Sculpture Museum in Da Nang offers educational platforms where learners can explore vernacular motifs and symbolic inscriptions without geographic constraints, fostering interdisciplinary research in art history, anthropology, and digital heritage studies (Jones & Yarrow, 2019).

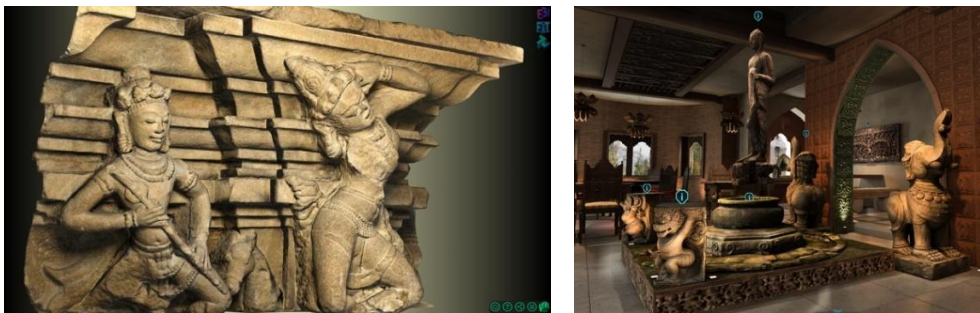


Fig 6: Cham Sculpture Museum in Da Nang
Source: VR3D, 2024

Community Engagement and Participatory Heritage Management.

Moreover, digital technologies empower the local communities to actively participate in heritage preservation. Platforms incorporating oral histories, virtual storytelling, or augmented reality experiences allow the residents to reconnect with their cultural roots and contribute knowledge about rituals and traditions associated with communal houses. AS Rossi, (2019) shows, through these initiatives, the đình làng becomes a living cultural hub rather than a static monument, reinforcing collective memory and identity.

Creative Reuse and Contemporary Design.

Digitized heritage serves as a resource for modern design and creative industries. Architectural motifs, decorative patterns, and symbolic elements captured digitally can inspire contemporary architecture, visual arts, and product design. For example, motifs from the Lai Yen Communal House have been incorporated into digital design projects and educational workshops, bridging traditional aesthetics with innovation and demonstrating how vernacular heritage informs contemporary cultural identity.

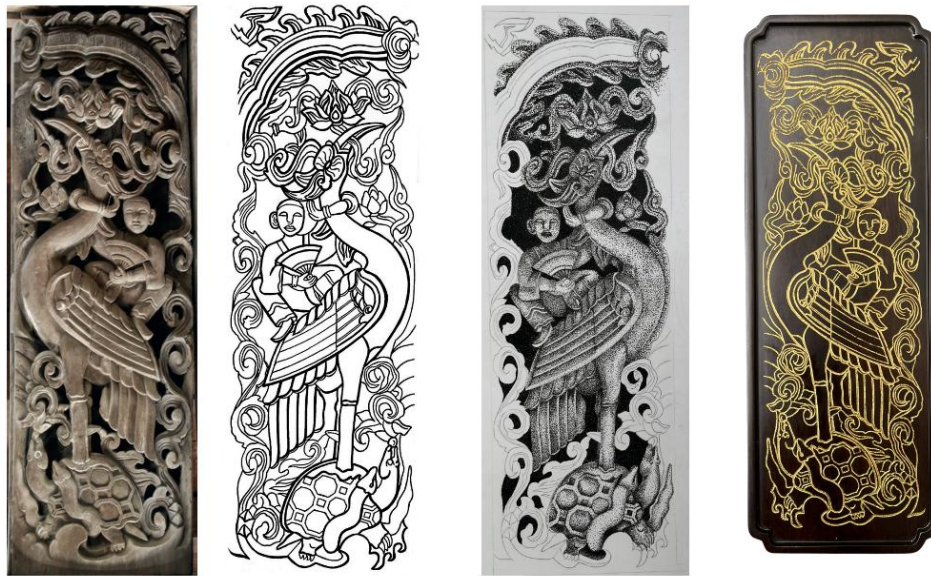


Fig 7. Tea Tray Design – Exploiting Carved Artistic Motifs from Hoang Xa Communal Hall
Hanoi Architecture University – Le Thi Kim Ngan, 21NT3, 2024

Integration with Visual Documentation.

Figures 2 and 3 illustrate the practical applications of digitization in capturing both structural details and symbolic motifs. Figure 2 highlights dragon carvings at Lâu Thượng Communal House, digitally preserved to retain visual and cultural values. Figure 3 shows the *cua vong* motif at Lai Yen Communal House, digitally archived to support both academic research and community education. These visualizations exemplify how digitization transforms tangible heritage into versatile resources for restoration, research, and creative reinterpretation.

Conclusion of Practical Applications.

These findings indicate that digital preservation extends beyond archiving, serving as a methodological bridge between heritage conservation and cultural development. Digitization revitalizes communal hall heritage as a living source for contemporary design and identity formation, acting as a creative catalyst connecting tradition with innovation. This framework also guides sustainable heritage preservation and offers a model for future digital heritage projects in Southeast Asia, promoting cross-cultural dialogue and knowledge exchange.

Overall, digitization of village communal houses extends far beyond technical documentation. It integrates heritage conservation, education, community participation, and

creative reuse, positioning communal houses as dynamic agents in sustaining Vietnam's vernacular heritage. By translating historical assets into accessible digital forms, these projects demonstrate that preservation and cultural innovation are mutually reinforcing, ensuring the relevance of traditional architecture in the digital era.

Establishing a Digitization Process for Village Communal Houses in Cyberspace

Establishing a comprehensive digitization process for village communal houses in cyberspace is a critical measure to safeguard the cultural and historical values of these heritage structures in Vietnam. The process must ensure accuracy, efficiency, and data security, encompassing a range of specialized methodologies such as field surveys, 3D scanning planning, data processing, digital modeling, secure data storage, development of online display and interaction systems, creation of open-access platforms, promotion, and continuous data maintenance.

In Vietnam's cultural sector, digitization has been increasingly prioritized by government agencies to protect intangible and tangible folk heritage. Higher education institutions incorporate digitization techniques into curricula, while heritage communities actively engage in field surveys and digitization initiatives. A prominent example is the IchLinks project by the Vietnam National Institute of Culture and Arts, which develops an online database dedicated to intangible cultural heritage across the Asia-Pacific region (Vietnam National Institute of Culture and Arts, 2023).

The digitization process can be systematically outlined as follows:

Step 1: Conducting Field Surveys of Local Heritage Sites

Effective digitization begins with comprehensive fieldwork that involves close coordination among the heritage experts, researchers, technologists, and cultural management authorities. Survey teams equipped with digital cameras, 3D scanners, measuring instruments, and audio-video recording devices meticulously document the physical condition and spatial context of communal houses. Prior to the survey, researchers should conduct a thorough review of historical records and local cultural archives and obtain formal permissions from relevant authorities to ensure compliance and support (Smith & Jones, 2021).

Step 2: Planning 3D Scanning and Digitization Objectives

Following the surveys, clear digitization goals must be articulated—whether the project aims to develop an online repository, create virtual exhibitions, or support community education. The scope of digitization should prioritize architectural elements, sculptures, carvings, and ritual artifacts based on their cultural significance and conservation status. Detailed project timelines and resource allocation plans are essential to optimize operational efficiency and feasibility (Nguyen et al., 2022).

Step 3: Data Processing and Digital Modeling

Digitizing heritage assets demands advanced technologies to accurately capture and reproduce three-dimensional details. This involves the use of handheld and stationary 3D scanners, structured light scanners, and high-resolution digital photography, including multispectral imaging to detect hidden surface features such as pigment layers or previous restorations. The collected data is then processed using specialized software to create precise, high-fidelity digital models that maintain the authenticity of the original artifacts (ISO 19115, 2020).

Step 4: Data Storage, Security, and Development of Online Interaction Platforms

Ensuring the integrity and longevity of digital heritage data requires robust data management strategies. These include implementing access control mechanisms, multi-factor authentication, and systematic data backups on cloud and offline storage solutions to mitigate risks of data loss or unauthorized access. Concurrently, the development of interactive web-

based platforms enables users to engage with digitized content through virtual tours, 3D visualizations, and educational modules, enhancing accessibility and outreach (UNESCO, 2019).

Step 5: Promotion, Sharing, and Community Engagement

To maximize impact, digitized heritage must be effectively promoted through diverse media channels and user-centered interface design. Establishing digital libraries and fostering online communities encourages cultural exchange, knowledge dissemination, and sustained public engagement. Leveraging social media platforms such as Facebook, Instagram, and YouTube facilitates broader sharing and awareness, while integrating digitization into educational curricula empowers students and instructors to utilize these digital resources effectively. Furthermore, community-based participatory digitization projects enrich the digital heritage database and foster local stewardship. International collaboration with art conservation organizations can provide valuable technical expertise and funding, enhancing Vietnam's capacity for heritage preservation (Brown & Lee, 2021).



Fig 8: A Five-Step Framework for Establishing the Digitization Process of Village Communal Houses in Cyberspace

In summary, the digitization of village communal houses represents a transformative opportunity to preserve and promote Vietnam's rich artistic and cultural heritage. By integrating advanced digital technologies with active community participation and institutional support, this process not only safeguards cultural assets but also enhances their accessibility and appreciation on both national and global stages.

Discussion

The preservation and digitization of village communal houses in Vietnam represent an important intersection between traditional cultural heritage and modern technological advancements. This study highlights the urgent need for sustainable preservation methods amid ongoing threats from natural degradation, urbanization, and socio-cultural changes.

A key contribution of this research is the systematic approach to integrating digital technologies such as 3D scanning, digital modeling, and secure data storage into the heritage conservation process. Unlike many previous efforts that focused primarily on physical restoration, this study underscores the value of digitization as a complementary tool that not only safeguards heritage data but also enhances accessibility, education, and community engagement. This approach aligns with international trends in cultural heritage preservation, where digital archives and virtual exhibitions play increasingly significant roles.

Moreover, the involvement of local communities and institutions, alongside governmental and academic bodies, represents a holistic model for heritage management. This participatory framework strengthens local stewardship and fosters a sense of ownership and responsibility toward cultural assets. Most importantly, this research also identifies gaps in professional expertise and funding as critical challenges, calling for stronger interdisciplinary collaboration and policy support.

Conclusions

This paper investigated how digital archiving can safeguard and revitalize both tangible and intangible values of communal hall heritage. It sought to contribute to the preservation of Vietnamese cultural identity and offer insights into heritage management that can be implemented in Vietnam in the digital era.

From the analysis and evaluation presented in the discussion, it is evident that applying digital technology in the preservation of village communal houses not only fulfills the demands of sustainable conservation but also creates new opportunities to promote traditional cultural values in the modern era. Based on this foundation, the following conclusions summarize key insights and propose further directions to enhance preservation and development efforts for communal house heritage.

The village communal house (đình làng) occupies a central role in the cultural, religious, and social fabric of the Vietnamese communities. It functions not only as a sacred space for worshipping protective deities but also as a hub for communal activities and festivals, symbolizing unity and social cohesion. These structures embody rich historical, architectural, and artistic values that reflect the traditions and cultural identity of Vietnam across centuries. Beyond their historical significance, communal houses serve as living educational resources, fostering cultural awareness and patriotism among the younger generations.

Despite their importance, many communal houses face significant risks due to severe deterioration from natural aging, environmental factors, and pressures of urbanization. Urgent preservation efforts are essential, including increased financial investments, professional restoration expertise, and active community participation. In this context, digitization emerges as a vital tool for safeguarding both the tangible and intangible values of communal houses. Digitization prevents information loss from physical damage, facilitates remote access and data sharing, optimizes storage requirements, and supports research and education through accessible digital archives.

The novelty of this study lies in presenting a comprehensive framework for digitizing village communal houses, integrating advanced technologies such as 3D scanning and multispectral imaging with community engagement and educational applications. This approach not only preserves the authenticity and artistic value of these heritage sites but also enhances public interaction and awareness through innovative digital platforms. Furthermore, it proposes practical guidelines for secure and sustainable management of digitized data, addressing challenges specific to Vietnam's cultural heritage landscape.

It reveals that, the application of modern digital technologies to the preservation of village communal houses represents a significant breakthrough in heritage conservation. This approach not only ensures the protection of Vietnam's cultural legacy amid rapid modernization and urbanization but also promotes broader accessibility, appreciation, and continued cultural vitality on both national and global levels.

In conclusion, this study advances the understanding of how digital technology can revitalize the preservation of village communal houses. By bridging traditional knowledge and modern innovation, it opens pathways for sustainable cultural conservation that respects historical authenticity while embracing the opportunities of the digital age.

However, limitations exist in terms of technical infrastructure, digital literacy, and resource allocation, particularly in rural areas where many communal houses are located. Future research should explore scalable, cost-effective digitization methods that can be adapted to diverse local contexts. Moreover, the ethical considerations regarding data privacy and cultural sensitivities must be addressed in the development of digital platforms.

The promising results of digitization projects such as IchLinks and other national initiatives demonstrate the feasibility and benefits of digital heritage preservation in Vietnam. Expanding these initiatives and fostering international cooperation could facilitate knowledge exchange and resource sharing, finally contributing to global efforts in safeguarding intangible cultural heritage.

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Ethical Practice: This research followed accepted ethical practices. It did not involve any personal data, nor did it coerce any participants to take part in this research under pressure. No person has been identified.

Availability of Data: Data presented in this research is selected from a larger data set and they are available for scrutiny by any legitimate organization.

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