# ARTIFICIAL INTELLIGENCE IN THE PROTECTION OF INTANGIBLE CULTURAL HERITAGE

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## Abstract

This article examines the integration of artificial intelligence (AI) into the management of intangible cultural heritage (ICH), with a focus on how AI and big data can enhance cross-cultural communication and the preservation of "living knowledge." Through a case study in Georgia, the article highlights the critical need for ongoing staff training in AI technologies to effectively manage ICH. Quantitative data reveal significant gaps in digital competencies among cultural heritage professionals, which create barriers to AI adoption. The study also emphasizes the need to adapt cultural policies in the digital era to ensure the sustainable preservation and transmission of ICH. By advocating for data-driven strategies, this paper offers actionable insights for improving cultural heritage management and policy frameworks, providing guidance for cultural institutions worldwide.

***Key words:*** Cultural Policy, Technological Transformation in Cultural Heritage, AI Integration in Intangible Cultural Heritage, ICH Management, Georgia.

## INTRODUCTION

On March 13, 2024, the European Parliament approved the Artificial Intelligence Act (European Parliament, 2024), a landmark regulatory framework that underscores AI's transformative potential across various sectors, including cultural heritage. This legislation, finalized with member states in December 2023,

highlights the growing importance of AI in addressing challenges and opportunities in managing intangible cultural heritage (ICH).

The Convention for the Safeguarding of the Intangible Cultural Heritage, adopted by the UNESCO General Conference in 2003 and entering into force in 2006, remains the cornerstone of global efforts to protect and promote intangible cultural practices. This treaty emphasizes the preservation of "living knowledge" – the traditions, expressions, and practices passed through generations that embody cultural diversity and identity (UNESCO, 2003).

At the nexus of these developments lies the intersection of AI technologies and "living knowledge", reflecting the evolution of cultural policies in the digital era. AI presents unique opportunities to analyze, interpret, and engage with cultural heritage, enabling the digitization of oral traditions, the creation of immersive experiences, and the revitalization of practices for future generations. However, the successful integration of AI in ICH management requires not only advanced technological capabilities but also robust institutional support and resource allocation.

In Georgia, where intangible cultural heritage forms a vital part of the nation's identity, the readiness of cultural institutions to adopt AI technologies is a pressing concern. Institutional and resource-based barriers–such as limited access to technology, inadequate technical infrastructure, and gaps in staff training–hinder the effective digitization and sustainable management of ICH. Addressing these challenges necessitates a comprehensive approach that includes interdisciplinary research, policy development, and strategic investments in technology and human resources.

This study investigates the institutional and resource-based barriers that affect the readiness of Georgian cultural heritage institutions to integrate AI technologies. It also explores strategies for overcoming these challenges to ensure the sustainable digitization and effective management of intangible cultural heritage, thus preserving its richness while embracing the opportunities of the digital age. Using interdisciplinary research, this study analyzes institutional challenges and proposes strategic solutions for integrating AI in Georgian ICH management.

## 1. LITERATURE REVIEW

The digitization of intangible cultural heritage (ICH) has emerged as a significant focus in cultural heritage studies, with researchers identifying numerous challenges and opportunities in this field. Key discussions in the literature address gaps in

digital competencies, standardization, technological integration, ethical considerations, collaborative frameworks, and the potential for artificial intelligence (AI) to drive innovative solutions.

*Digital Competencies and Training*

Studies highlight the lack of adequate digital skills among cultural heritage professionals as a barrier to effective ICH management. Das, Maringanti, and Dash emphasize the importance of capacity-building programs tailored to the unique demands of digitization, including the use of emerging technologies like AI and big data analytics (Das, B. R., Maringanti, H. B., & Dash, N. S., 2022). This aligns with broader calls for professional development to equip staff with the necessary competencies for digital transformation in cultural institutions. However, newer studies, such as those by Harisanty, D. and Retrialisca, F., suggest that digital skill-building must also address immersive technologies like virtual reality (VR) and augmented reality (AR) to preserve and showcase cultural traditions effectively. These insights resonate strongly with the need for tailored professional development in Georgia, where gaps in digital competencies are a known barrier to AI integration.

While capacity-building programs have been advocated to bridge these digital skill gaps, there is an emerging need for training that specifically integrates the use of AI in ICH management. AI has the potential to revolutionize how cultural heritage is preserved and promoted, from automating the cataloging process to enhancing accessibility through advanced data analytics. Yet, despite the promise of AI, many cultural heritage professionals still lack the specific skills required to utilize these technologies effectively. This underscores a significant gap in both training programs and institutional readiness to integrate AI into digitization efforts.

*Standardization and Interoperability*

The need for unified cataloging standards in the management of intangible cultural heritage (ICH) is a central concern in recent literature. As highlighted by Zoannos, Chourdaki, and Assimakopoulos, inconsistent cataloging procedures, metadata models, and data storage methods across different countries create significant barriers to global interoperability and the long-term preservation of ICH (Zoannos, N., Chourdaki, P., & Assimakopoulos, N., 2023). These variations in cataloging practices hinder the seamless sharing and accessibility of cultural heritage across borders, underscoring the urgent need for standardized approaches, particularly in light of global uncertainties and technological risks. Their work advocates for the development of a clear, internationally recognized process, such

as the one outlined by UNESCO, to unify digitization practices and ensure that ICH is preserved and accessible for future generations.

Further complicating this issue, Lian and Xie emphasize the growing importance of digital technologies, such as virtual reality (VR) and augmented reality (AR), in enhancing cultural heritage experiences and expanding public engagement (Lian, Y., & Xie, J., 2024). Despite the significant progress in digital cultural heritage (DCH) research, they identify the need for systematic assessment methods and standardized frameworks to guide the implementation of these technologies. Their research also points to the potential of linked data and semantic web technologies to improve the discoverability and contextualization of ICH. This strategy could foster international collaboration and the development of digital archives and databases, addressing the fragmentation in cataloging standards and improving global access to ICH.

In Georgia, where digital cultural heritage systems are still evolving, the adoption of such international frameworks could significantly accelerate the digitization process and improve the integration of Georgian ICH into global platforms. This underscores the pressing need for unified cataloging standards that facilitate interoperability, ensure efficient integration of ICH records into global digital platforms, and contribute to the long-term preservation and global accessibility of ICH.

While digital technologies, including AI, VR, and AR, hold immense promise for enhancing the preservation and promotion of ICH, a critical gap remains in the ability to apply these technologies in a standardized and interoperable manner. Current efforts to digitize ICH are often fragmented, with differing cataloging practices and metadata standards hindering cross-border access and collaboration. This literature reveals a clear need for comprehensive frameworks that not only address the training and skill gaps among cultural heritage professionals but also establish standardized protocols for digitization and data storage that can be adopted internationally. As AI technologies continue to emerge, it is essential that training programs in cultural heritage institutions evolve to include AI literacy and the specific tools necessary for its implementation in heritage management. This need is particularly urgent in Georgia, where the integration of AI and big data into the digitization of ICH is still in its early stages. Therefore, the literature reviewed not only highlights the current barriers but also stresses the importance of moving towards a more integrated and standardized approach to digitization that includes emerging technologies like AI.

*Technological Integration*

The application of artificial intelligence (AI) and big data in the management of intangible cultural heritage (ICH) presents a transformative opportunity for both preservation and engagement. Giannini, E., & Makri, E. (2023) explore the potential of AI in automating cataloging processes, creating interactive cultural experiences, and enhancing the accessibility of ICH to global audiences. However, they caution against an over-reliance on technology, emphasizing the need for human oversight to ensure the preservation of cultural authenticity. This perspective highlights the challenge of balancing technological innovation with the safeguarding of cultural values.

Complementing this, Liu and Song discuss the use of AI-enhanced storytelling, particularly through generative AI tools that reconstruct and animate oral traditions (Liu, H., & Fan, J., 2024). These innovations broaden the engagement of younger audiences while preserving the essence of cultural practices. In the context of Georgia, these technologies offer significant potential for documenting and revitalizing endangered oral traditions, an area where resource constraints and limited technical infrastructure currently pose substantial challenges. The use of AI in this area could help bridge these gaps, enabling more effective documentation and preservation of cultural heritage that is at risk of being lost.

*Ethical and Legal Challenges*

Ethical concerns play a central role in discussions regarding the digitization of intangible cultural heritage (ICH). Clippele, M. S. highlights critical issues such as privacy, intellectual property rights, and the risk of cultural appropriation in digital contexts (Clippele, M. S., 2023). These challenges underscore the need for careful consideration of the ethical implications of digitizing cultural heritage. In addition, the UNESCO Guidelines for Safeguarding Intangible Cultural Heritage (2020) stress the importance of establishing ethical frameworks that balance the benefits of digitization with respect for cultural traditions and community rights.

Expanding on this, Sonuç, N., & Süer, S. argue for the implementation of community-led protocols in digitization efforts, ensuring that local stakeholders retain control over how their heritage is represented and shared in digital formats (Sonuç, N., & Süer, S., 2023). This approach is especially pertinent in the context of Georgia, where engaging local communities in digital heritage projects could significantly enhance cultural authenticity and help address concerns about cultural appropriation. By prioritizing community involvement, Georgia can ensure that the digitization process is both ethically sound and culturally respectful.

*Collaborative and Multilateral Approaches*

Successful digitization initiatives often depend on collaborative efforts among various stakeholders. Park, S., & Kudo, H. explore this dynamic in their research on the role of cultural organizations as knowledge-intensive public organizations (KIPOs) (Park, S., & Kudo, H., 2024). Their study, using a country case study, highlights how digital content creation in museums and national strategies contributes to the development of digital services. The research underscores the growing importance of digital technologies in museums, not only for attracting new audiences but also for improving knowledge management and enhancing the reproduction of cultural knowledge. The authors argue that museums, as KIPOs, can leverage digital tools to create valuable digital content, which can be used for both public engagement and more efficient service delivery.

Building on this idea, Andrii, F. demonstrates how regional alliances in Eastern Europe have successfully pooled resources to digitize intangible cultural heritage (ICH) across borders (Andrii, F., 2023). This cooperation showcases the potential of scalable, cooperative models, particularly in resource-constrained contexts. For Georgia, fostering similar collaborations could play a crucial role in overcoming institutional and resource-based barriers to digitization, while also benefiting from the expertise of international partners in preserving and sharing ICH.

*Role of Digital Museums and Archival Systems*

Emerging literature highlights the role of digital museums and archival digitization in facilitating access to ICH. Georgia's efforts in establishing digital museums, as outlined in national policy reports (Georgian Ministry of Culture, 2023), serve as an example of early-stage adoption of technology in ICH management. While these initiatives remain limited in scope, they highlight the importance of foundational work in digitization for broader AI integration (Lupo, E., & Rubino, F., 2023). Digital for heritage and museums: design-driven changes and challenges underscores the importance of scalable archival digitization as a prerequisite for advanced AI applications in cultural heritage. Establishing robust archival frameworks in Georgia would provide a strong foundation for implementing AI-driven solutions.

*AI-Driven Innovations in ICH Preservation*

Recent studies shed light on the potential of AI tools to overcome institutional and resource constraints. Gîrbacia, F. explores the use of AI-driven predictive models to identify at-risk cultural traditions, enabling preemptive documentation and preservation (Gîrbacia, F., 2024). Similarly, case studies from AI-supported immersive storytelling projects demonstrate how machine learning can create

virtual environments where users can interact with cultural practices, enhancing engagement and education (Ott, 2022). In Georgia, such AI-driven innovations could transform how ICH is documented and shared, ensuring its sustainability while.

## 2. USING ARTIFICIAL INTELLIGENCE FOR THE MANAGEMENT OF INTANGIBLE CULTURAL HERITAGE: ASSESSING STAFF PREPAREDNESS IN GEORGIA

Artificial Intelligence (AI) is revolutionizing the management and preservation of intangible cultural heritage (ICH), which includes oral traditions, performing arts, rituals, and other expressions deeply rooted in community identities. By leveraging AI technologies such as machine learning, natural language processing, and computer vision, institutions can enhance the documentation of ICH, transforming vast datasets–such as oral histories, artifact images, and performance videos–into comprehensive, durable digital records that safeguard these traditions for future generations. AI-driven tools like virtual reality (VR) and augmented reality (AR) expand accessibility and engagement by providing immersive cultural experiences, such as virtual tours and interactive reenactments, fostering broader appreciation and participation across diverse audiences. Dynamic educational frameworks, including adaptive learning platforms and 3D visualizations, preserve the experiential aspects of cultural practices, enabling users to actively engage with traditional crafts and ceremonies despite geographical or resource limitations. Furthermore, AI supports research by identifying patterns in folklore, analyzing historical data, and uncovering trends, enhancing interdisciplinary understanding of cultural evolution.

Despite its transformative potential, integrating AI into ICH management requires addressing ethical and cultural sensitivities, such as respectful representation of traditions and safeguarding intellectual property rights. Collaboration with local communities is essential to ensure that AI tools align with cultural values. While emerging technologies like generative AI and advanced analytics offer innovative approaches for ICH engagement, technical limitations persist. For instance, models like Structure from Motion (SfM - is a photogrammetric technique used to create 3D models from 2D images.) offer visualization but lack the precision of Laser Scanning (LiDAR)) for archival purposes (Barszcz, 2021). Experimental Museology (Kenderdine, 2021) refers to an interdisciplinary approach to museology that integrates emerging technologies with the traditional study and presentation of cultural heritage. In the context of ICH, experimental museology explores innovative

ways to digitally preserve, interact with, and engage communities around cultural traditions, performances, and practices that are often not represented in physical museum collections. This approach often includes tools like AI, VR, and AR to create immersive experiences and digital archives, encouraging active participation and co-creation by the public. By combining traditional cultural knowledge with digital technologies, experimental museology enables a more dynamic, evolving preservation model that goes beyond static exhibits, fostering a deeper connection to living, intangible cultural heritage.

In Georgia, efforts to digitize ICH are at an early stage, focusing on the digitization of archival data and the development of digital museums. The establishment of a digital museum marks a significant milestone, providing an interactive platform for showcasing and preserving Georgia's cultural heritage. These initiatives serve as centralized repositories for cultural artifacts, traditions, and oral histories, offering broader public access and laying the foundation for advanced AI applications. Although AI is not yet widely implemented in Georgia's cultural heritage sector, these digitization efforts are critical first steps toward harnessing AI technologies for tasks such as automated classification, virtual reconstructions of cultural artifacts or sites, and AI-driven interactive educational programs.

Looking ahead, Georgia's integration of AI into ICH management will depend on addressing existing institutional and technological challenges, fostering collaboration among stakeholders, and building on these foundational projects. By leveraging AI in conjunction with virtual tools like serious games (SGs – Games designed for educational or informative purposes, often with cultural or heritage themes), mixed reality (MR - A blend of physical and virtual worlds that allows for immersive, interactive experiences, combining aspects of both AR and VR) and accessibility-focused initiatives, Georgia can ensure the sustainable preservation and dynamic engagement of its intangible cultural heritage for future generations.

## 2.1. CRITERIA FOR EVALUATING STAFF READINESS

Assessing the readiness of staff involved in managing intangible cultural heritage (ICH) to use artificial intelligence (AI) is crucial for effective integration. The following criteria are essential for evaluating this readiness:

*Awareness and Education*: Many staff members may not fully understand AI's capabilities and applications in ICH management. Offering targeted education and training programs can help improve their knowledge of how AI can enhance their work, increasing their willingness to adopt AI technologies.

*Technical Skills*: Implementing AI typically requires skills in areas such as data analysis, machine learning, and programming. Staff members may need to develop or refine these skills to effectively use AI tools and platforms in their roles, including proficiency in data processing, AI algorithms, and programming languages like Python or R.

*Cultural Sensitivity:* AI technologies must be applied with respect for cultural contexts and ethical considerations. Staff should be trained to ensure that AI applications uphold the diversity and integrity of ICH, avoiding biases and ensuring culturally sensitive representation.

*Resource Availability:* Effective AI implementation requires financial resources, technical infrastructure, and organizational support. Staff readiness is enhanced when these resources are available, and the organization demonstrates a commitment to supporting AI initiatives through both funding and infrastructure development.

*Collaboration and Partnerships:* Partnering with AI experts, technology vendors, and other cultural institutions can ease the adoption of AI in ICH management. Staff are more likely to embrace AI if they have access to external expertise and support, fostering an environment of collaboration.

*Risk Management*: Concerns about data privacy, security, and potential job displacement may affect staff willingness to use AI. Establishing clear guidelines, policies, and safeguards will mitigate these concerns, building staff confidence in utilizing AI technologies responsibly.

Staff readiness to adopt AI in ICH management depends on a combination of factors, including awareness, technical skills, cultural sensitivity, resource availability, collaboration, and risk management. Addressing these factors through education, training, support, and partnerships will enhance staff readiness and facilitate the successful integration of AI into ICH management practices.

## 2.2. RESEARCH SCOPE AND METHODOLOGY

This study evaluates the readiness of Georgia's Intangible Cultural Heritage (ICH) management system for integrating digital technologies. A quantitative survey was conducted to assess the preparedness of both staff and institutions in digitizing ICH and adapting to new technological tools in cultural heritage management.

The survey was administered to 1,074 respondents from various cultural heritage institutions across Georgia. These included key museums, research centers, and heritage protection agencies directly involved in ICH management.

The institutions participating in the survey were: National Museum of Georgia; Tbilisi Historical-Ethnographic Museum; Kutaisi State Historical Museum; Telavi Historical-Ethnographic Museum; National Agency for Protection of Cultural Heritage of Georgia; Cultural Heritage Protection and Research Center (A(A)IP); Institute of History and Ethnology of TSU.

These institutions were selected for their central role in preserving and managing Georgia's ICH, making them representative of the national heritage landscape.

The survey consisted of 12 questions designed to assess key aspects of staff preparedness for engaging with digital technologies in ICH management. The main focus areas were: Demographic Information (General data about respondents, including age, gender, and educational background); Digitization Experience (Prior experience with digitizing both tangible and intangible cultural heritage materials); Skills and Competencies (The knowledge and skills necessary for effective digitization of ICH, including familiarity with digital tools and techniques); Training and Education (The extent of education and training received in areas related to ICH digitization, museum technologies, and digital preservation strategies); Course Participation (Involvement in specialized courses or workshops on ICH digitization, as well as staff expectations for future training opportunities).

The survey responses were analyzed to assess the readiness of Georgia's ICH management system for digital transformation. The findings identified gaps in training and technological preparedness, suggesting areas that require further development and institutional support. These insights are intended to guide future initiatives aimed at improving staff capacity and institutional infrastructure for digitization.

Educational Background: 48 % of respondents hold a Master's degree, 50 % have a Bachelor's degree, 2 % possess a Doctoral degree.

Academic Disciplines: 32 % in Archaeology, 12 % in Social Sciences, 12 % in Tourism Management, 12 % in Art History, 8 % in History, 8 % in Ethnology, 8 % in Culture Management, 5 % in Museology, 3 % in IT Technologies.

Demographics: 72 % of respondents were women. 38 % of respondents were aged 50 or older, reflecting a relatively experienced workforce. 71 % of respondents with advanced degrees held a Master's degree, with the majority specializing in Archaeology.

These findings provide important insights into the educational and professional background of the personnel involved in ICH management, which is crucial for evaluating their readiness to engage with digital technologies. The data highlights

both the strengths in specialized knowledge and areas where further development in digital skills is needed.

## 2.3. RESEARCH ANALYSIS

The survey analysis provides an in-depth assessment of the current digital competencies, training levels, and preparedness of staff involved in the management and promotion of Georgia's intangible cultural heritage (ICH). The findings reveal both strengths in foundational skills and significant gaps in readiness to advance digitization efforts within the field.

Current Skill Levels and Digital Competencies. The survey responses highlighted varying levels of digital proficiency among respondents, categorized into basic and advanced skills.

Basic Competencies. A significant portion of participants demonstrated proficiency in basic digital skills, including: Operating office software, managing emails, and utilizing social media platforms.

Using basic tools such as cameras, drones, and video/photo editing software.

Advanced Digital Skills. A smaller subset of respondents reported more specialized digital skills. The most commonly noted advanced skills included: Digital Marketing (16.74 %): A strong focus on leveraging digital platforms to enhance ICH visibility. E-commerce (15.66 %): Competence in managing online sales and transactions, vital for monetizing cultural products. Product Management (15.32 %): The ability to organize and manage heritage offerings for digital dissemination. Digital Design (12.74 %): Skills in creating engaging content related to ICH. Content Management (11.29 %): Essential for curating and organizing digital heritage assets. Technical Guidance (10.95 %): Providing support for technical aspects of ICH management. Data Management/Analysis (9.10 %): Critical for analyzing trends and making informed decisions. Multimedia Production (9.83 %): Creating videos and interactive digital content. IP and Rights Management (6.18 %): Important for protecting cultural assets in the digital space. Electronic Communications (6.92 %) and Social Media (6.92 %): Demonstrating familiarity with modern communication tools to engage audiences.

Knowledge of National Guidelines. The survey also assessed respondents' awareness of national guidelines for cataloging, preserving, and presenting intangible cultural assets. The findings were as follows: 63 % of respondents were aware of such guidelines. 37 % lacked knowledge, suggesting a significant gap in information dissemination and staff education on institutional protocols.

Training and Education in ICH Digitization. The responses revealed considerable variability in training and educational experiences among respondents: 20 % of respondents had completed formal certification courses in digital preservation and ICH management. 16 % had received practical training on digitization equipment, including scanners, cameras, and relevant software. 14 % had participated in online learning platforms such as Coursera and edX. 13 % had received institutional training tailored to their organization's needs. 15 % had attended workshops and seminars focused on emerging trends and technologies. 12 % had gained experience through on-the-job training, though the depth and consistency of such training varied. 10 % engaged in self-directed learning, though lacking formal guidance.

Experience in Cataloging Intangible Assets. The survey revealed that: Only 8 % of respondents had direct experience with cataloging intangible assets. 92 % had no experience in this critical area, emphasizing an urgent need for targeted training and capacity-building programs in cataloging practices.

 Implications for Future ICH Projects. The low percentage of staff with cataloging experience underscores the necessity for comprehensive professional development in Georgia's ICH management system. To address these challenges, several recommendations are proposed:

Expanding Training Opportunities: To address gaps in skills related to cataloging and advanced digitization techniques, training programs should be expanded and tailored to meet these specific needs. Enhancing Awareness: Efforts should be made to improve the dissemination of national guidelines and institutional protocols to ensure all staff members are well-informed and capable of adhering to best practices.

Strengthening Technical Skills: Focused training on multimedia production, data analysis, and intellectual property management is essential to equip staff with the technical skills required for modern ICH management. Fostering Collaboration: Encouraging partnerships with technology providers and other cultural institutions can help share resources and expertise, strengthening Georgia's capacity to digitize and promote its ICH.

By addressing these areas, Georgia's ICH management system can build a workforce capable of effectively leveraging digital tools to preserve and promote cultural heritage in the digital age.

## 2.4. RESULTS

The survey results highlight a promising foundation among staff involved in cultural heritage protection, with a strong emphasis on modern competencies such

as digital marketing and e-commerce, which are instrumental in promoting and managing intangible cultural heritage (ICH). These skills reflect a forward-looking approach to increasing the visibility and accessibility of ICH in a digital era.

While staff exhibit good awareness of the legal frameworks and possess basic digital tools, the findings reveal a notable gap in practical experience with cataloging intangible assets. Despite 63 % of respondents being familiar with cataloging guidelines, only 8 % have hands-on experience in this critical area, underscoring the need for targeted training and development.

The study identifies the integration of big data and artificial intelligence (AI) as transformative opportunities for managing and developing ICH. These technologies offer potential benefits, such as: Enhanced Preservation and Accessibility: AI-driven tools enable efficient cataloging, customization, and restoration of ICH, ensuring its global accessibility.

Innovative Promotion: Digital platforms allow for tailored communication and interactive experiences that broaden audience engagement. However, adopting such technologies must address ethical considerations, privacy concerns, and legal compliance to safeguard the integrity of ICH.

Cataloging Gaps: Despite awareness of guidelines, a lack of practical expertise in cataloging ICH objects presents a significant challenge.

Inconsistent Standards: Variability in cataloging methods across institutions and countries hinders global integration.

Training Needs: There is a clear need for comprehensive training programs to equip professionals with advanced digital skills, including multimedia production, data management, and intellectual property rights.

Alignment with Global Platforms: Adapting Georgian cultural institutions to platforms like EUROPEANA can improve access to and alignment with international standards, fostering cross-cultural exchange and collaboration.

*Key Recommendations*

Enhancing Digital Competencies. It is imperative to design and implement advanced training programs that focus on developing staff expertise in digital cataloging, artificial intelligence (AI) applications, and emerging technologies. These programs should incorporate both theoretical and practical components to ensure a well-rounded understanding of digital tools and their applications in intangible cultural heritage (ICH) management.

Developing Unified Cataloging Standards. The establishment of standardized guidelines for cataloging intangible assets is crucial to achieving consistency across institutions. Unified standards will facilitate interoperability between local and

international organizations, promoting the efficient integration of ICH records into global digital platforms.

Integrating Advanced Technologies. The integration of big data analytics and AI-driven tools into the preservation and promotion of ICH offers transformative possibilities. These technologies can optimize cataloging processes, enhance accessibility, and foster the creation of innovative cultural experiences, ensuring the dynamic dissemination of ICH in the digital era.

Fostering Multilateral Collaboration. A multi-stakeholder approach is essential for the successful implementation of digital heritage initiatives. Cultural institutions, technology providers, policymakers, and local communities must collaborate to ensure that digitization efforts are both effective and sustainable. Such partnerships can facilitate resource sharing, foster innovation, and promote the inclusivity of diverse cultural narratives.

Establishing Ethical and Legal Frameworks. Addressing the ethical and legal challenges associated with digitization is paramount. These frameworks should prioritize the protection of privacy and intellectual property while ensuring equitable access to digitized cultural heritage. The ethical use of emerging technologies must be monitored to safeguard the authenticity and integrity of ICH.

Evaluating Global and Local Implications. The digitization of ICH not only contributes to preserving cultural traditions but also enhances cross-cultural understanding and global engagement. This process has the potential to strengthen cultural identities, drive economic growth within creative industries, and facilitate international cultural exchange. Future research should explore the socioeconomic impacts of these efforts to refine strategies for cultural heritage management.

By addressing these priorities, the field can bridge existing gaps and harness digital innovations to preserve, promote, and share ICH effectively with global and local audiences, ensuring its sustainability for future generations.

## CONCLUSION

In conclusion, this research uniquely examines the readiness of Georgian cultural heritage institutions to integrate artificial intelligence (AI) technologies for managing intangible cultural heritage (ICH). While the findings identify institutional and resource-based barriers–such as gaps in digital competencies, a lack of practical cataloging experience, and insufficient training programs–the study also proposes strategies for overcoming these challenges. These strategies focus on enhancing staff skills, developing standardized cataloging practices, and fostering collaborations with technology providers. The originality of this research lies in its exploration of

AI's potential to transform the digitization and preservation of ICH in Georgia, an area largely unexplored within the Georgian context.

However, a potential limitation of the research is its lack of broader international significance, particularly regarding how Georgia's ICH management compares to other countries adopting AI in heritage preservation. While the study provides valuable insights into the local context, future research could broaden this perspective to include a comparative analysis with other nations, thus enhancing the global relevance of the findings.

Furthermore, the adoption of AI in cultural heritage management must also consider legal frameworks, such as the Artificial Intelligence Act proposed by the European Parliament in 2024. This regulation aims to provide a comprehensive approach to managing AI technologies, ensuring their ethical and legal use across EU member states. Integrating these regulations into the context of ICH management would be crucial for Georgia as it moves towards digitization, helping to address concerns about the ethical implications, data protection, and intellectual property rights surrounding AI technologies.

Future research could further explore the intersection of AI technologies and international policy frameworks, specifically focusing on the ethical and legal implications of digitizing cultural heritage through AI. This would not only address the evolving legal landscape but also ensure that Georgia's ICH management aligns with global standards and best practices in digital heritage preservation.

## REFERENCES

Das, B. R., Maringanti, H. B., & Dash, N. S. (2022). Role of artificial intelligence in preservation of culture and heritage. In Digitalization Of Culture through Technology (pp. 92–97). Routledge.

Harisanty, D., Obille, K. L. B., Anna, N. E. V., Purwanti, E., & Retrialisca, F. (2024). Cultural heritage preservation in the digital age, harnessing artificial intelligence for the future: a bibliometric analysis. Digital Library Perspectives, 40(4), 609–630.

Zoannos, N., Chourdaki, P., & Assimakopoulos, N. (2023). Can UNESCO Use Blockchain to Ensure the Intangible Cultural Heritage of Humanity? A Systemic Approach That Explains the Why, How, and Difficulties of Such a Venture. Heritage, 6(3), 3232-3255 t.

Lian, Y., & Xie, J. (2024). The Evolution of Digital Cultural Heritage Research: Identifying Key Trends, Hotspots, and Challenges through Bibliometric Analysis. Sustainability, 16(16), 7125.

Giannini, E., & Makri, E. (2023, March). Cultural Heritage Protection and Artificial Intelligence; The Future of Our Historical Past. In International Conference on Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage (pp. 375–400). Cham: Springer Nature Switzerland.

Liu, H., & Fan, J. (2024). AI-Mediated Communication in EFL Classrooms: The Role of Technical and Pedagogical Stimuli and the Mediating Effects of AI Literacy and Enjoyment. European Journal of Education, e12813.

Clippele, M. S. (2023). Are Digital Cultural Commons Culturally Diverse?. International Journal for the Semiotics of Law-Revue internationale de Sémiotique juridique, 36(5), 2067–2086.

Andrii, F. (2023, April). LEGAL PROTECTION OF INTANGIBLE CULTURAL HERITAGE. In The 13th International scientific and practical conference "Information activity as a component of science development"(April 04–07, 2023) Edmonton, Canada. International Science Group. 2023. 580 p. (p. 110).

Park, S., & Kudo, H. (2024). Cultural institutions as knowledge-intensive public organisations (KIPOs) and their role: how digitalisation can change them providing sustainable and accessible public services. Journal of Public Budgeting, Accounting & Financial Management.

Lupo, E., Camosino, G., Gobbo, B., Motta, M., Mauri, M., Parente, M., ... & Rubino, F. (2023). Digital for heritage and museums: design-driven changes and challenges.

Gîrbacia, F. (2024). An Analysis of Research Trends for Using Artificial Intelligence in Cultural Heritage. Electronics, 13(18), 3738.

Barszcz, M. a.-{. (2021). Comparative analysis of digital models of objects of cultural heritage obtained by the "3D.

Kenderdine, S. (2021). Experimental museology: Immersive visualisation and cultural (big) data. Experimental, Museology, 15.

Ott, M., Dagnino, F. M., & Pozzi, F. (2015). Intangible cultural heritage: Towards collaborative planning of educational interventions. Computers in Human Behavior, 51, 1314–1319.