

Sustainable Arts Management in the Digital Era: A Systematic Review of Digital Transformation Strategies for Indonesian Cultural Institutions

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ABSTRACT: Digital transformation has become a strategic priority for Indonesian cultural institutions responding to technological change, evolving audience expectations, and sustainability demands, particularly following the COVID-19 pandemic. Using a Systematic Literature Review of publications from 2020 to 2025, this study synthesizes knowledge on how digital transformation contributes to the organizational sustainability of museums, galleries, archives, libraries, and performing arts organizations in Indonesia. Findings indicate that digital transformation functions as a multidimensional organizational capability extending beyond mere technological adoption. Digital infrastructure expands cultural access through online exhibitions, virtual collections, and hybrid programming, while sustainability is strengthened through adaptive leadership, collaborative governance, and professional digital competencies. Standardized metadata and digital preservation strategies are essential for protecting cultural heritage, and audience development increasingly depends on mobile-first communication and participatory digital engagement. Nevertheless, persistent challenges remain, including unequal digital infrastructure, limited professional capacity, governance fragmentation, and inadequate interoperability across institutions. The study concludes that sustainable digital transformation requires coordinated integration of infrastructure, governance, organizational capacity, audience development, preservation, and financial resilience, rather than isolated technological initiatives. The proposed conceptual framework offers practical guidance for policymakers and cultural managers, while calling for future empirical research on digital maturity across diverse Indonesian cultural institutions.

Keywords: Sustainable Arts Management, Digital Transformation, Cultural Institutions, Digital Preservation, Organizational Sustainability, Indonesia, Cultural Heritage



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INTRODUCTION

Digital transformation has become one of the defining developments shaping the management and sustainability of cultural institutions worldwide. Museums, galleries, performing arts

organizations, festivals, archives, libraries, and community-based cultural organizations increasingly rely on digital technologies to preserve collections, expand audience engagement, improve operational efficiency, and strengthen institutional resilience. Although digitalization was already emerging before 2020, the COVID-19 pandemic dramatically accelerated its adoption by forcing cultural institutions to replace or complement physical activities with online and hybrid services. This rapid transition fundamentally changed how cultural heritage is documented, interpreted, communicated, and experienced, positioning digital transformation as a strategic component of sustainable arts management rather than merely a technological innovation. As cultural institutions continue adapting to post-pandemic conditions, digital capabilities have become closely associated with long-term organizational sustainability, public accessibility, and institutional competitiveness.

The international literature consistently demonstrates that digital transformation has expanded the capacity of cultural institutions to maintain public engagement during periods of disruption while simultaneously creating new opportunities for interpretation, education, and cultural participation. Research on museums in Poland illustrates that the pandemic accelerated online exhibitions, digital collections, and virtual engagement, while also revealing that audiences continued to value physical visits after restrictions were lifted, suggesting that digital services function most effectively as complementary rather than substitute experiences (Gawel, 2023). Similar developments have been documented across Southeast Asia. In Malaysia, museums and heritage institutions increasingly adopted augmented reality, virtual exhibitions, and digital heritage technologies to compensate for declining visitor numbers and maintain cultural visibility during the pandemic (Fauzi et al., 2022). Likewise, digitization initiatives in Vietnam employed photogrammetry and three-dimensional documentation technologies to strengthen museum capacity despite limited financial and human resources, demonstrating that digital technologies can enhance organizational resilience while supporting long-term heritage preservation (Duester et al., 2023). Collectively, these studies indicate that digital transformation has become embedded within institutional sustainability strategies by extending audience reach, facilitating continuous access to collections, and supporting innovative curatorial practices beyond the immediate context of the pandemic.

The Indonesian context reflects similar developments but presents distinctive institutional, technological, and governance challenges. National statistics indicate that internet access increased steadily from 53.73% of the population in 2020 to 72.78% in 2024, reflecting a substantial expansion of the country's potential digital audience. At the same time, mobile-phone ownership substantially exceeds household computer ownership, suggesting that digital cultural services should prioritize mobile-first rather than desktop-oriented delivery. Furthermore, data from the Indonesian Internet Service Providers Association show that Generation Z and millennials constitute the largest proportion of internet users, reinforcing the importance of social media, visual storytelling, interactive learning, hybrid programming, and short-form digital content in contemporary audience-development strategies. However, significant disparities between urban and rural internet use continue to limit equitable access to digital cultural resources, indicating that technological expansion alone cannot guarantee inclusive participation. These conditions demonstrate that Indonesian cultural institutions must integrate digital transformation with

broader organizational strategies addressing accessibility, infrastructure, human resources, governance, and regional inclusion.

Beyond technological adoption, sustainable arts management has evolved into a multidimensional concept encompassing economic, organizational, social, cultural, technological, and environmental sustainability. Existing theoretical perspectives emphasize that cultural institutions contribute to sustainable development not only through heritage preservation but also by strengthening social cohesion, supporting regional identity, promoting cultural diplomacy, and generating economic opportunities (Byrne & Bereson, 2022; Hajura, 2022). Within Southeast Asia, museums, national galleries, and performing arts organizations increasingly function as platforms for regional cooperation and cultural exchange, demonstrating how institutional collaboration contributes to long-term sustainability while reinforcing national and regional identities (Dewanto & Saragih, 2024; Molho, 2020). At the organizational level, digital transformation has also reshaped audience participation, curatorial practice, stakeholder relationships, and institutional business models, making digital capability an increasingly important determinant of organizational resilience and sustainable management (An, 2024; Gawel, 2023).

The literature further suggests that digital transformation is influenced by a combination of technological, organizational, and policy-related drivers. The COVID-19 pandemic served as the primary catalyst for rapid digital adoption across museums and cultural institutions, compelling organizations to develop online exhibitions, virtual tours, streaming performances, and digital educational programs (Gawel, 2023; Fauzi et al., 2022; Duester et al., 2023). Advances in digital heritage technologies, including photogrammetry, three-dimensional digitization, augmented reality, and virtual reality, have expanded opportunities for documenting and presenting cultural assets while reducing dependence on physical access (Beltz & Reumont, 2023). Regional collaboration, international partnerships, and cultural diplomacy have further stimulated investments in digital infrastructure and cross-institutional initiatives, enabling museums and cultural organizations to strengthen their visibility within Southeast Asian cultural networks (Dewanto & Saragih, 2024). Nevertheless, resource constraints, uneven digital competence, limited funding, inadequate infrastructure, and regulatory challenges continue to hinder the implementation of sustainable digital strategies, particularly in developing countries (Kamaludin, 2021). Concerns regarding intellectual property, digital ownership, licensing, and heritage governance also complicate the responsible dissemination and commercialization of digital cultural resources (Smith & Perry, 2023; Yuniza et al., 2022).

Digital transformation also has important implications for cultural preservation and organizational resilience. Digitization supports the documentation, conservation, and dissemination of both tangible and intangible cultural heritage by creating accessible digital surrogates that reduce dependence on physical access while increasing opportunities for research, education, and public engagement (Duester et al., 2023; An, 2024; Gawel, 2023). However, scholars caution that preservation should not be equated simply with technological reproduction. Ethical digitization requires careful attention to authenticity, provenance, community participation, cultural sensitivity, and intellectual-property protection to prevent misrepresentation or commodification of heritage resources (Yuniza et al., 2022; Smith & Perry, 2023; Beltz & Reumont, 2023). Consequently, digital

preservation must integrate technical standards, governance mechanisms, and participatory approaches that safeguard cultural values while enhancing public accessibility.

The evidence further indicates that audience expectations have evolved alongside increasing internet penetration and mobile technology adoption. Digital participation has become a lasting component of museum and heritage experiences, with audiences expecting multimedia interpretation, online collections, virtual events, and interactive educational resources even after the reopening of physical venues (Gawel, 2023; An, 2024). Nevertheless, physical experiences remain highly valued, suggesting that hybrid models combining digital and onsite engagement represent a more sustainable direction than complete substitution of traditional cultural experiences. Such hybrid approaches are particularly relevant in Indonesia, where diverse geographic conditions, unequal digital infrastructure, and varying levels of digital literacy require flexible service models capable of accommodating different audience needs.

Despite the growing body of international scholarship, important research gaps remain concerning the integration of digital transformation and sustainable arts management within Indonesian cultural institutions. Existing studies frequently focus on specific aspects of digitalization, such as virtual exhibitions, collection digitization, audience engagement, or individual case studies, while relatively few examine how technological transformation interacts simultaneously with governance, organizational resilience, financial sustainability, digital competence, copyright, preservation, and institutional collaboration. Indonesian scholarship also remains limited regarding longitudinal assessments of digital sustainability, comparative analyses across different types of cultural institutions, and evidence-based evaluations of hybrid digital–physical service models (Kamaludin, 2021; Beltz & Reumont, 2023; Smith & Perry, 2023). Furthermore, empirical research connecting national digital trends, cultural policy, institutional performance, and sustainability outcomes remains fragmented, limiting the development of comprehensive management frameworks appropriate for Indonesia's diverse cultural ecosystem.

Accordingly, this literature review aims to synthesize research published between 2020 and 2025 concerning digital transformation and the organizational sustainability of Indonesian cultural institutions. By integrating international scholarship, Southeast Asian experiences, Indonesian policy documents, and national statistical evidence, the review seeks to identify key drivers, barriers, and strategic approaches that support sustainable arts management in the digital era. The principal novelty of this study lies in proposing an integrated conceptual framework that connects digital infrastructure, organizational capacity, cultural preservation, audience development, collaborative governance, financial resilience, and technological sustainability within the Indonesian context. The review argues that digital transformation should be understood not as an isolated technological initiative but as a comprehensive organizational strategy that strengthens resilience, expands equitable cultural access, and supports the long-term sustainability of Indonesia's cultural institutions.

METHOD

Research Design

This study employs a Systematic Literature Review (SLR) to synthesize current knowledge on digital transformation and organizational sustainability in Indonesian cultural institutions between 2020 and 2025. A systematic review was selected because it enables a transparent, reproducible, and evidence-based synthesis of multidisciplinary literature while identifying emerging themes, methodological patterns, and research gaps. Compared with traditional narrative reviews, SLRs apply explicit search procedures, eligibility criteria, quality assessment, and structured evidence synthesis, thereby reducing selection bias and improving the reliability of conclusions (Booth et al., 2021).

The methodological approach adopted in this study is informed by recent review practices in digital transformation, cultural management, museum studies, and heritage management. Previous research demonstrates that systematic reviews and scoping reviews have become the dominant approaches for synthesizing multidisciplinary evidence across Galleries, Libraries, Archives, and Museums (GLAM). These approaches enable researchers to map broad bodies of literature, identify thematic clusters, examine conceptual developments, and establish future research agendas in cultural policy and digital transformation (Mariano & Vårheim, 2021; Vårheim & Skare, 2021).

Methodological Framework

Recent studies indicate that research on digital transformation in cultural institutions commonly combines several complementary review approaches. Scoping reviews are particularly useful for mapping multidisciplinary knowledge and identifying emerging themes across museums, libraries, archives, cultural centers, and related policy domains. Their flexible screening procedures allow researchers to incorporate evidence from multiple disciplines while maintaining transparent inclusion and exclusion processes (Vårheim & Skare, 2021).

Bibliometric reviews have also become increasingly important for identifying publication trends, research networks, thematic evolution, and digital-transformation trajectories within cultural heritage studies. These quantitative mapping techniques are frequently complemented by qualitative synthesis to interpret governance structures, policy developments, and institutional practices associated with museum digitization and open-data ecosystems (Mariano & Vårheim, 2021).

In addition, qualitative case-study synthesis remains a common methodological approach because digital transformation frequently depends on organizational contexts that cannot be adequately understood through bibliometric evidence alone. Previous studies have combined interviews with museum managers, curators, policymakers, and technology specialists with documentary analysis and institutional reports to explain how digital strategies are implemented, governed, and evaluated within cultural organizations (Booth et al., 2021; Mariano & Vårheim, 2021). More recent studies have strengthened these approaches by incorporating expert consultation, iterative framework validation, and methodological reflexivity to improve conceptual robustness and practical relevance (Lucia et al., 2024).

Drawing upon these methodological developments, the present review adopts an integrative systematic synthesis that combines structured literature identification with thematic evidence analysis. Rather than conducting a purely bibliometric review, the study synthesizes empirical research, policy documents, statistical publications, institutional reports, and selected international case studies to provide a comprehensive understanding of sustainable digital transformation in Indonesian cultural institutions.

Information Sources

To ensure comprehensive coverage of the literature, multiple academic databases and institutional repositories were consulted. International peer-reviewed literature was identified primarily through Scopus, Web of Science, Dimensions, and Google Scholar. These databases provide broad coverage of museum studies, cultural management, digital heritage, information science, public policy, and organizational research.

Because cultural-policy research frequently appears outside conventional journal databases, additional institutional publications were incorporated. These include reports from UNESCO, Statistics Indonesia (BPS), the Indonesian Internet Service Providers Association (APJII), the Directorate General of Culture, Statistics of Culture (2023 and 2024), Indonesia OneSearch, and other official government publications. This strategy follows previous systematic and scoping reviews that recommend combining indexed academic literature with authoritative institutional reports to capture practical developments in cultural governance and digital transformation (Vårheim & Skare, 2021; Mariano & Vårheim, 2021).

Search Strategy

The search strategy was designed to maximize coverage across multiple disciplines while maintaining relevance to the research objectives. Following recommendations from previous systematic reviews, broad multidisciplinary keywords were combined using Boolean operators to retrieve publications from museum studies, heritage management, information science, cultural policy, digital humanities, and organizational management (Mariano & Vårheim, 2021; Vårheim & Skare, 2021).

The principal search terms included combinations of:

"digital transformation";

"digitalization";

"digitization";

"museum";

"gallery";

"cultural institution";

"heritage management";
"digital heritage";
"cultural heritage";
"digital preservation";
"open data";
"metadata";
"digital platform";
"organizational sustainability";
"institutional resilience";
"arts management";
"cultural governance";
"audience engagement";
"Indonesia";
"Southeast Asia".

Boolean operators ("AND", "OR") were used to refine searches and improve retrieval precision. For example:

("digital transformation" OR digitization OR digitalization) AND (museum OR gallery OR "cultural institution" OR heritage) AND (sustainability OR governance OR resilience) AND (Indonesia OR "Southeast Asia")

In addition to database searches, backward and forward snowball sampling was employed by examining the reference lists of highly relevant publications and identifying studies that subsequently cited those works. Previous methodological studies have shown that snowball sampling substantially improves coverage in interdisciplinary research where important evidence may appear in books, policy reports, conference proceedings, or grey literature (Silva & Oliveira, 2024).

Expert consultation was also incorporated as a complementary strategy during framework development. Recent methodological studies recommend combining systematic searching with expert review to improve conceptual validity and reduce the risk of overlooking influential studies within rapidly evolving research fields (Lucia et al., 2024).

Eligibility Criteria

The literature-selection process followed explicit inclusion and exclusion criteria to ensure consistency and transparency throughout the review.

Studies were included when they:

were published between 2020 and 2025;

were written in English or Indonesian;

focused on digital transformation, digitization, digital preservation, digital participation, cultural governance, or sustainable management of cultural institutions;

examined museums, galleries, libraries, archives, festivals, performing arts organizations, heritage institutions, cultural communities, or other GLAM organizations;

presented empirical findings, conceptual frameworks, policy analyses, or systematic reviews relevant to the research objectives.

The review intentionally included both empirical and conceptual studies because previous methodological reviews emphasize that understanding digital transformation requires integrating practical implementation evidence with theoretical developments concerning governance, sustainability, organizational resilience, and open cultural ecosystems (Mariano & Vårheim, 2021; Vårheim & Skare, 2021).

Studies were excluded if they:

focused exclusively on commercial technology without cultural relevance;

lacked sufficient methodological transparency;

contained duplicated data;

were opinion pieces without analytical evidence;

addressed digital technologies unrelated to cultural institutions or heritage management.

Screening Procedure

The screening process followed a structured sequence adapted from established systematic-review practices.

First, publications were identified through database searches and institutional repositories. Duplicate records were then removed before titles and abstracts were screened for relevance. Potentially eligible studies subsequently underwent full-text assessment against the inclusion criteria. Finally, methodological quality and relevance were evaluated before studies were included in the thematic synthesis.

This sequential process follows contemporary systematic-review practice in museum studies and cultural-policy research, where iterative screening improves transparency while allowing multidisciplinary evidence to be incorporated systematically (Vårheim & Skare, 2021).

Data Extraction

For each eligible publication, a standardized extraction form was developed to improve consistency across studies. The extracted information included:

bibliographic information;
publication year;
country or region;
institution type;
research objectives;
methodological approach;
digital-transformation strategy;
sustainability dimensions;
principal findings;
policy implications;
organizational implications;
identified limitations.

Standardized extraction enables systematic comparison across heterogeneous studies and facilitates thematic synthesis by ensuring that equivalent information is collected from every publication (Booth et al., 2021).

Quality Assessment

Quality assessment was conducted to evaluate methodological rigor, conceptual clarity, and evidence reliability. Rather than relying solely on publication status, each study was assessed according to:

source authority;
methodological transparency;
conceptual clarity;
relevance to digital transformation and sustainable arts management;
quality of empirical evidence;
consistency between findings and conclusions;
applicability to Indonesian cultural institutions.

This multidimensional assessment reflects recent methodological developments that advocate combining methodological quality with contextual relevance, particularly in interdisciplinary fields such as cultural management and digital heritage (Lucia et al., 2024).

Evidence Synthesis

Following quality assessment, the selected literature was synthesized using thematic analysis. This approach enables findings from diverse methodological traditions to be integrated into coherent analytical themes while preserving contextual differences among studies.

The synthesis classified evidence into ten major themes:

- digital infrastructure and digital access;
- digital transformation of cultural institutions;
- organizational governance and leadership;
- digital competence and human-resource development;
- audience development and public participation;
- digital preservation and collection management;
- financial sustainability and resource diversification;
- copyright and intellectual-property governance;
- institutional collaboration and interoperability;
- cultural continuity and organizational resilience.

The thematic approach follows recent systematic reviews in digital heritage and cultural management, where evidence from empirical studies, policy documents, and institutional reports is integrated to explain complex organizational phenomena rather than merely describing individual case studies (Lucia et al., 2024).

Methodological Contribution

By integrating systematic-review procedures with thematic evidence synthesis, institutional reports, national statistics, and international case studies, this methodology extends existing review approaches commonly applied in GLAM research. Unlike studies that focus exclusively on bibliometric mapping or individual case studies, the present review combines academic literature with Indonesian policy documents, cultural statistics, and digital-transformation initiatives to construct an evidence-based framework for sustainable arts management. This integrative design is intended to strengthen both the analytical depth and practical applicability of the review, providing a comprehensive methodological foundation for examining digital transformation within Indonesian cultural institutions.

RESULT AND DISCUSSION

Digital Infrastructure and Access

The reviewed literature consistently identifies digital infrastructure as the fundamental enabler of sustainable digital transformation within Galleries, Libraries, Archives, and Museums (GLAMs). Rather than serving merely as a technological resource, digital infrastructure functions as an organizational capability that supports continuous access to cultural resources, facilitates audience engagement, and strengthens institutional resilience. During the COVID-19 pandemic, digital platforms enabled museums, galleries, and performing arts organizations to maintain communication with audiences despite prolonged restrictions on physical visitation. Across multiple international case studies, online exhibitions, virtual collections, livestreamed performances, and interactive educational resources emerged as essential mechanisms for maintaining public access to culture while reducing dependence on physical facilities (Gawel, 2023; An, 2024; Duester et al., 2023).

Evidence further demonstrates that digital infrastructure should not be interpreted as a replacement for physical cultural experiences. Instead, successful institutions increasingly adopt hybrid models that integrate digital services with onsite programming. Studies consistently report that while digital platforms substantially increase accessibility and geographic reach, audiences continue to value direct encounters with collections, exhibitions, and performances. Consequently, sustainable arts management requires complementary integration of digital and physical experiences to preserve authenticity, social interaction, and cultural meaning while simultaneously expanding accessibility (Gawel, 2023; An, 2024).

Broadband connectivity and increasing mobile technology adoption have further accelerated the expansion of digital cultural services. Regional evidence from Malaysia and Vietnam demonstrates that investments in digital infrastructure enabled museums to implement virtual exhibitions, photogrammetry-based documentation, three-dimensional digitization, and augmented reality applications despite limited financial and human resources (Fauzi et al., 2022; Duester et al., 2023). These initiatives illustrate that digital infrastructure not only enhances public access but also supports preservation activities, educational outreach, and institutional continuity under conditions of resource scarcity. Open-source technologies, in particular, have been identified as cost-effective alternatives that allow cultural institutions to extend digital services without requiring substantial technological investment.

Despite these advances, the literature consistently highlights the persistence of the urban–rural digital divide as a major challenge for equitable cultural participation. Unequal internet connectivity, disparities in digital literacy, and differences in technological access continue to influence who can participate in digital cultural services. Studies from Southeast Asia caution that digital transformation may unintentionally reinforce existing inequalities unless institutions deliberately design inclusive digital strategies that accommodate users with limited connectivity, lower digital competencies, or constrained technological resources (An, 2024; Gawel, 2023). Consequently, accessibility should be understood not solely as technological availability but also as the ability of diverse communities to meaningfully engage with digital cultural resources.

The reviewed literature also identifies several indicators of digital readiness that influence institutional capacity for sustainable transformation. These include technological readiness, organizational preparedness, supportive policy environments, interoperability, metadata management, and long-term governance arrangements. Malaysian heritage institutions demonstrate that technology readiness and collaborative implementation strategies significantly improve institutional preparedness for digital transformation (Fauzi et al., 2022). Likewise, governance-oriented studies emphasize that openness, interoperability, standardized metadata, and institutional commitment to long-term digital stewardship represent critical indicators of sustainable digital maturity within GLAM organizations (Cerquetti et al., 2023; Booth et al., 2021). Collectively, these findings indicate that digital infrastructure should be viewed as an integrated organizational ecosystem comprising technological, managerial, and policy components rather than as isolated hardware or software investments.

Digital Transformation of Cultural Institutions

The literature demonstrates that digital transformation within museums, galleries, archives, festivals, and performing arts organizations extends far beyond collection digitization. Contemporary digital transformation encompasses organizational restructuring, audience engagement, digital service innovation, and collaborative governance, all of which contribute to long-term institutional sustainability. Across the reviewed studies, cultural institutions increasingly combine digitization initiatives with online exhibitions, virtual tours, augmented and virtual reality applications, livestreaming, and hybrid programming to strengthen accessibility while maintaining institutional relevance (Gawel, 2023; An, 2024; Duester et al., 2023).

A common pattern emerging from the literature is the integration of digital transformation within broader ecosystem-based approaches. Rather than operating independently, cultural institutions increasingly participate in open-data initiatives, collaborative digital repositories, and interinstitutional partnerships that facilitate knowledge exchange, resource sharing, and interoperability. Such ecosystem-oriented approaches strengthen institutional resilience by distributing technological expertise, reducing duplication of effort, and improving long-term sustainability through collaborative governance structures (Booth et al., 2021; Mariano & Vårheim, 2021).

Virtual exhibitions, digital repositories, and hybrid cultural events have significantly expanded opportunities for public engagement. During the pandemic, these digital services enabled museums and performing arts organizations to continue delivering educational programs, exhibitions, and cultural performances despite restrictions on physical access. Although digital participation increased substantially, empirical studies consistently indicate that audiences continue to prefer physical visits for many cultural experiences. Accordingly, hybrid engagement models are widely recognized as the most sustainable strategy because they combine the accessibility and flexibility of digital platforms with the authenticity and experiential value of onsite participation (Gawel, 2023; An, 2024).

The pandemic also accelerated experimentation with innovative digitization methodologies, including photogrammetry, three-dimensional scanning, augmented reality, and immersive virtual environments. These technologies not only supported remote access during public-health restrictions but also strengthened long-term preservation by creating high-quality digital surrogates of cultural assets. Regional experiences in Malaysia and Vietnam demonstrate that even institutions with limited budgets can successfully implement sustainable digitization strategies when technological innovation is combined with open-source solutions, collaborative partnerships, and appropriate organizational planning (Duester et al., 2023; Fauzi et al., 2022).

Nevertheless, the literature cautions against interpreting digital transformation solely as technological modernization. Institutions that rely excessively on digital channels risk diminishing the authenticity, social interaction, and educational richness associated with direct engagement with cultural heritage. Consequently, sustainable transformation requires careful balancing of digital and physical experiences while ensuring that technological innovation remains aligned with institutional missions, heritage values, and public expectations (Gawel, 2023; An, 2024).

Successful digital transformation is also strongly associated with organizational characteristics rather than technological capacity alone. Leadership commitment, organizational learning, stakeholder participation, and cross-sector collaboration repeatedly emerge as critical determinants of successful implementation. Institutions capable of integrating digital initiatives with curatorial objectives, educational programming, and audience-development strategies demonstrate greater resilience and adaptability during periods of rapid technological change (Byrne & Bereson, 2022; An, 2024; Gawel, 2023). These findings suggest that sustainable digital transformation depends equally upon managerial capability, institutional culture, and strategic governance as upon technological investment itself.

Overall, the evidence indicates that digital transformation should be conceptualized as a comprehensive organizational change process. Sustainable implementation requires coordinated investments in digital infrastructure, leadership, governance, audience engagement, institutional collaboration, and preservation strategies. When these elements operate synergistically, digital transformation enhances not only operational efficiency but also organizational resilience, cultural accessibility, and long-term sustainability across the cultural sector.

Organizational Capacity and Governance

The literature consistently demonstrates that organizational capacity and governance are central determinants of successful digital transformation in cultural institutions. While technological infrastructure provides the operational foundation for digital initiatives, governance structures determine how digital resources are allocated, managed, and sustained over time. Effective governance aligns digital transformation with institutional missions, policy objectives, financial planning, and accountability mechanisms, thereby ensuring that digitization contributes to long-term organizational sustainability rather than isolated technological projects (Lasally et al., 2023).

One of the principal findings across the reviewed studies is that governance should integrate sustainability and resilience perspectives into digital decision-making. Rather than viewing

digitization solely as a technological investment, successful institutions incorporate digital initiatives into strategic planning, organizational risk management, and performance evaluation. Such integration enables institutions to balance innovation with preservation responsibilities while maintaining accountability to stakeholders, government agencies, and the broader public. Governance frameworks that emphasize transparency, long-term planning, and institutional adaptability are therefore associated with higher levels of digital maturity and organizational resilience (Hajura, 2022; Lasally et al., 2023).

Digital transformation also requires the development of specialized competencies among cultural managers and heritage professionals. The literature identifies metadata management, digitization workflow design, interoperability standards, digital preservation, open-data governance, and digital rights management as core competencies that support sustainable digital operations. These competencies allow institutions to establish reliable repositories, manage digital collections effectively, facilitate information exchange across platforms, and ensure compliance with preservation and copyright requirements. Consequently, human-resource development emerges as a strategic priority rather than a supporting administrative function (Booth et al., 2021; Cerquetti et al., 2023).

Leadership is equally important in shaping institutional responses to digital transformation. Studies consistently report that adaptive leadership encourages organizational learning, supports innovation, and facilitates cross-disciplinary collaboration among curators, archivists, educators, information specialists, and technology professionals. Such collaborative leadership enables institutions to respond more effectively to technological change while maintaining their educational, cultural, and social missions. Organizational learning further strengthens resilience by encouraging continuous evaluation, knowledge sharing, and iterative improvement of digital services (Byrne & Bereson, 2022; An, 2024; Gawel, 2023).

The literature further highlights multi-stakeholder governance as an essential characteristic of sustainable digital transformation. Effective governance models establish clear responsibilities regarding data ownership, metadata standards, copyright management, digital preservation, and interinstitutional collaboration. Rather than operating independently, cultural institutions increasingly benefit from shared governance arrangements that facilitate resource pooling, collaborative digitization projects, and common technological standards. Such governance models improve operational efficiency while reducing duplication of effort across museums, archives, libraries, and heritage organizations (Smith & Perry, 2023; Cerquetti et al., 2023; Mariano & Vårheim, 2021).

Overall, organizational capacity should be understood as the interaction of governance, leadership, professional competence, institutional learning, and collaborative management. Digital transformation becomes sustainable when these organizational capabilities evolve alongside technological development, allowing institutions to continuously adapt to changing technological, social, and cultural environments.

Audience Development and Participation

The reviewed literature identifies audience development as one of the most significant outcomes of digital transformation in cultural institutions. Digital technologies have fundamentally reshaped how museums, galleries, festivals, archives, and performing arts organizations communicate with audiences, expanding participation beyond geographical limitations while creating new opportunities for interaction, learning, and community engagement. Rather than functioning solely as communication tools, digital platforms increasingly serve as environments for cultural participation, co-creation, and lifelong learning (Gawel, 2023; An, 2024).

A recurring finding is that digital engagement substantially increases accessibility to cultural resources. Online exhibitions, livestreamed performances, virtual tours, educational webinars, and interactive digital platforms enable institutions to reach audiences who may be unable to visit physical venues due to geographical distance, mobility constraints, financial limitations, or public-health restrictions. However, despite these advantages, the literature consistently reports that digital participation complements rather than replaces physical visitation. Hybrid engagement models therefore emerge as the preferred approach because they combine the accessibility of digital services with the experiential richness of onsite cultural participation (Gawel, 2023; An, 2024).

Changing demographic patterns further influence digital audience strategies. Younger generations, particularly Generation Z and millennials, increasingly expect mobile-based, interactive, and visually engaging cultural experiences. Consequently, cultural institutions are adopting communication strategies centered on social media, digital storytelling, immersive technologies, augmented reality, and interactive multimedia content. Open-data ecosystems and digital participation platforms also encourage audiences to contribute knowledge, comments, and user-generated content, transforming visitors from passive consumers into active participants within digital cultural ecosystems (Booth et al., 2021; Mariano & Vårheim, 2021; An, 2024).

The literature also emphasizes the growing importance of mobile-first design. As smartphones have become the dominant means of internet access in many countries, including Indonesia, digital cultural services increasingly prioritize responsive websites, mobile applications, multilingual interfaces, and lightweight digital platforms that function effectively across varying connectivity conditions. Inclusive digital design further requires attention to accessibility for users with disabilities, older adults, and communities with limited digital literacy. Although significant progress has been achieved, several studies note that accessibility challenges remain, highlighting the need for universal design principles within digital cultural services (Brischetto et al., 2023).

Evaluating audience engagement has likewise become more sophisticated with the expansion of digital services. Traditional visitor counts are increasingly complemented by digital performance indicators such as website traffic, virtual exhibition attendance, livestream participation, engagement duration, interaction quality, social-media activity, repeat visitation, and user-generated content. Several studies argue that comprehensive evaluation frameworks should combine quantitative usage statistics with qualitative indicators that capture educational impact, audience satisfaction, participation depth, and long-term engagement. Such multidimensional assessment enables institutions to better understand how digital participation contributes to

organizational sustainability and public value (Cerquetti et al., 2023; Booth et al., 2021; Lucia et al., 2024).

Collectively, the evidence suggests that sustainable audience development extends beyond increasing digital reach. Long-term success depends upon designing inclusive, participatory, and user-centered experiences that accommodate diverse demographic groups while preserving the educational and cultural missions of institutions. Digital participation therefore becomes an integral component of sustainable arts management by strengthening public engagement, expanding cultural accessibility, and reinforcing institutional relevance within rapidly evolving digital societies.

Digital Preservation and Collection Management

Digital preservation has emerged as one of the most critical dimensions of sustainable arts management because it ensures the long-term accessibility, authenticity, and usability of cultural assets. The reviewed literature consistently demonstrates that digitization should not be interpreted simply as converting analogue collections into digital formats. Instead, sustainable digital preservation requires an integrated framework encompassing metadata standards, preservation planning, governance mechanisms, technological infrastructure, and institutional commitment. Such an approach enables cultural institutions to preserve both tangible and intangible heritage while ensuring that digital resources remain accessible across successive technological generations (Fresa, 2013; Hassan et al., 2024).

International literature identifies metadata interoperability as one of the most important prerequisites for sustainable digital preservation. Standardized metadata enables collections to be discovered, interpreted, exchanged, and reused across multiple repositories and digital platforms. Frameworks such as the Categories for the Description of Works of Art (CDWA) and VRA Core are widely recognized for supporting consistent documentation practices and facilitating interoperability among museums, libraries, and archives. High-quality metadata therefore contributes not only to collection management but also to broader objectives of institutional collaboration, public accessibility, and long-term digital stewardship (Pandey & Kumar, 2023).

The reviewed studies also reveal that technological preservation alone is insufficient without appropriate organizational governance. Long-term preservation requires sustainable funding, clearly defined preservation responsibilities, copyright management, digital rights governance, and institutional policies that regulate the maintenance and migration of digital assets. The increasing volume of born-digital cultural materials including digital artworks, multimedia installations, and virtual exhibitions introduces additional challenges concerning authenticity, file obsolescence, licensing, and platform dependency. Consequently, digital preservation is increasingly conceptualized as a socio-technical process in which technological solutions must operate alongside governance, policy, and financial planning (Nogueira et al., 2023; Pandey & Kumar, 2023).

Emerging technologies further expand opportunities for preserving and disseminating cultural heritage. Three-dimensional digitization, artificial intelligence, immersive visualization, blockchain

applications, and advanced digital repositories provide new possibilities for documenting fragile heritage assets while improving accessibility for researchers, educators, and the wider public. Nevertheless, the literature emphasizes that technological innovation should remain aligned with institutional objectives and ethical principles. Preservation initiatives should prioritize authenticity, cultural sensitivity, and community participation to avoid reducing cultural heritage to merely technological representations (Nogueira et al., 2023).

Successful digital-preservation frameworks therefore combine technical standards with organizational commitment. Case studies from museums, archives, and heritage organizations consistently demonstrate that sustainable preservation depends on integrating standardized metadata, structured preservation workflows, long-term storage strategies, routine system maintenance, and collaborative governance arrangements. Cross-institutional cooperation further strengthens preservation outcomes by facilitating shared repositories, distributed storage systems, common technical standards, and coordinated preservation policies. Such collaborative approaches reduce duplication of effort while enhancing institutional resilience against technological change and resource limitations (Dombrowski et al., 2022; Salse et al., 2022).

For Indonesian cultural institutions, these findings suggest that digital preservation should be embedded within broader strategies of organizational sustainability. National initiatives such as Indonesia OneSearch and the Indonesian Digital Cultural Library illustrate the potential for collaborative preservation through interoperable digital infrastructures. However, sustaining these initiatives requires continued investment in metadata standardization, professional training, cybersecurity, long-term financial support, and governance mechanisms capable of maintaining digital repositories over extended periods. Consequently, digital preservation represents both a technological responsibility and an institutional governance challenge that directly influences the long-term sustainability of cultural organizations.

Synthesis of Results

The systematic review demonstrates that digital transformation has become a multidimensional organizational process that extends beyond the adoption of digital technologies. Across the reviewed literature, five interrelated dimensions consistently emerge as fundamental to sustainable arts management.

First, digital infrastructure provides the technological foundation that enables cultural institutions to expand access, maintain organizational continuity, and deliver hybrid cultural services. However, infrastructure alone does not guarantee sustainability unless supported by inclusive design, equitable access, and long-term investment.

Second, digital transformation strategies are most effective when integrated into institutional missions through hybrid programming, collaborative digital ecosystems, and continuous organizational learning. Successful institutions treat digitalization as an organizational transformation rather than an isolated technological initiative.

Third, organizational capacity and governance determine the sustainability of digital initiatives through leadership, strategic planning, digital competencies, and multi-stakeholder governance. Institutions with stronger governance frameworks exhibit greater resilience, adaptability, and long-term digital maturity.

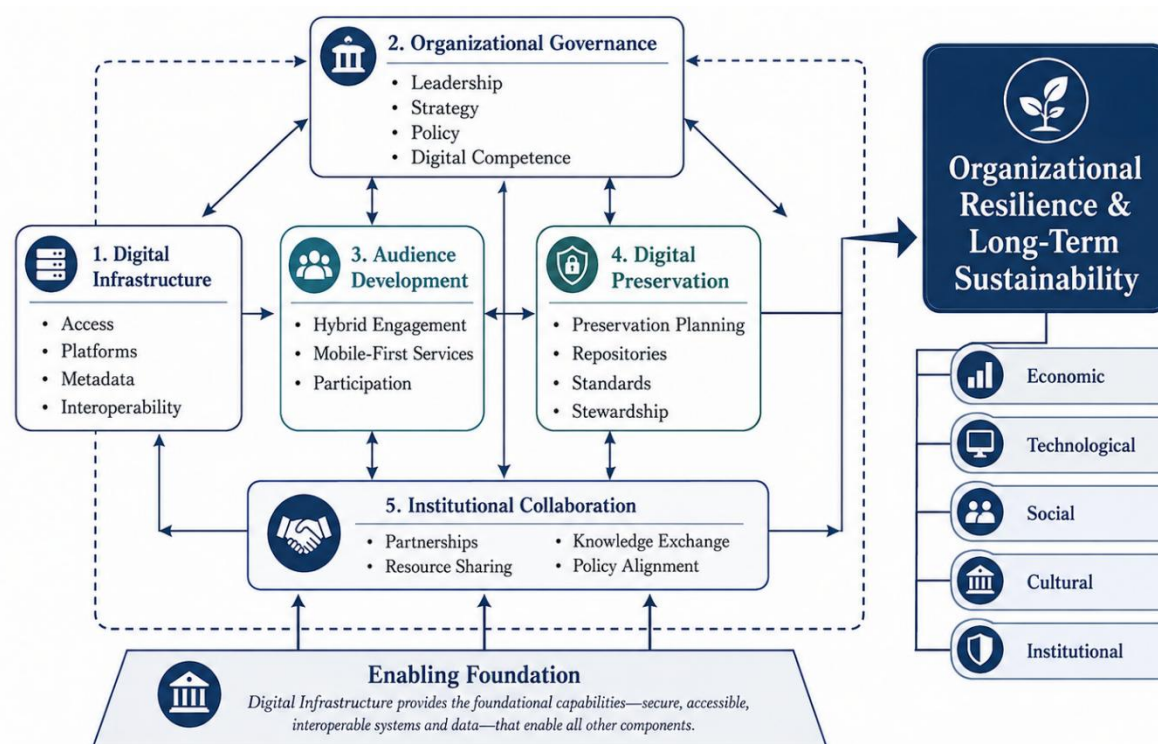
Fourth, audience development has shifted from passive cultural consumption toward interactive and participatory engagement. Digital platforms, mobile-first services, and hybrid experiences broaden accessibility while reinforcing the continuing importance of physical cultural participation.

Finally, digital preservation ensures the long-term protection, discoverability, and accessibility of cultural assets through standardized metadata, preservation planning, governance mechanisms, and institutional collaboration. Sustainable preservation depends on the integration of technological innovation with organizational commitment and policy support.

Taken together, these findings indicate that sustainable digital transformation should be understood as an integrated organizational capability encompassing technological, managerial, social, and cultural dimensions. Digital maturity is therefore achieved not through technological investment alone but through the coordinated development of governance structures, professional competencies, collaborative networks, audience-centered services, and preservation strategies.

Figure 3 presents the conceptual synthesis derived from the reviewed literature. The framework illustrates how digital infrastructure, organizational governance, audience development, institutional collaboration, and digital preservation interact to strengthen organizational resilience and support the long-term sustainability of cultural institutions in Indonesia.

Figure 3. Integrated Evidence-Based Framework of Sustainable Digital Transformation for Cultural Institutions



Source: Synthesized from the reviewed literature (2020–2025).

The framework positions digital infrastructure as the enabling foundation, organizational governance as the coordinating mechanism, audience development and digital preservation as core operational functions, and institutional collaboration as the connecting element that enhances resource sharing, interoperability, and policy alignment. Together, these dimensions contribute to organizational sustainability across economic, technological, social, cultural, and institutional domains.

The synthesized findings provide the empirical and conceptual foundation for the subsequent discussion chapter, which interprets these relationships within Indonesian cultural policy, sustainable arts management theory, and international digital-transformation literature.

The findings of this literature review demonstrate that digital transformation has evolved from an emergency response during the COVID-19 pandemic into a strategic pillar of sustainable arts management. Across the reviewed studies, digital technologies consistently contribute to organizational sustainability by extending cultural access beyond physical venues, strengthening institutional resilience during periods of disruption, supporting long-term heritage preservation, and creating new opportunities for audience participation and revenue diversification. Rather than representing a temporary technological adjustment, digital transformation has become an integrated organizational capability that reshapes how cultural institutions preserve heritage, deliver public services, and generate social and economic value (Gawel, 2023; An, 2024; Duester et al., 2023).

One of the principal contributions emerging from the synthesis is that sustainable digital transformation should not be understood as replacing traditional cultural experiences. Instead, the evidence consistently supports hybrid organizational models in which digital platforms

complement rather than substitute physical engagement. Museums, galleries, festivals, and performing arts organizations increasingly employ online exhibitions, virtual collections, livestreaming, and interactive educational resources to broaden accessibility while maintaining the authenticity, experiential richness, and social interaction associated with onsite cultural participation. Cross-regional evidence demonstrates that although audiences increasingly expect digital services, demand for physical visitation remains strong, indicating that hybrid engagement provides the most sustainable balance between accessibility, inclusivity, and cultural value (Gawel, 2023; An, 2024).

The review further indicates that digital transformation contributes substantially to cultural preservation by extending the lifespan and accessibility of cultural assets. Digitization, online repositories, three-dimensional documentation, and virtual heritage applications preserve both tangible and intangible cultural resources while enabling wider public participation in cultural stewardship. Digital surrogates reduce the risks associated with handling fragile collections, facilitate educational reuse, and increase opportunities for collaborative research across institutions. Nevertheless, preservation cannot rely exclusively on technological innovation. Sustainable preservation requires governance arrangements that safeguard authenticity, intellectual-property rights, cultural sensitivity, and community participation, thereby ensuring that digital representations complement rather than diminish the cultural significance of heritage resources (Duester et al., 2023; An, 2024).

Leadership, governance, and organizational learning emerge as equally important determinants of long-term sustainability. Across the reviewed literature, institutions that successfully integrate digital transformation are characterized by adaptive leadership, collaborative governance, and continuous organizational learning. These characteristics enable managers to align digital initiatives with institutional missions, educational objectives, and public-service responsibilities while responding effectively to technological change. Rather than focusing solely on technological acquisition, resilient organizations cultivate digital competencies, encourage cross-disciplinary collaboration, and establish governance structures that support iterative learning and strategic adaptation. Such organizational capabilities reinforce institutional legitimacy and enable digital transformation to become embedded within long-term organizational development rather than remaining a series of isolated technological projects (Byrne & Bereson, 2022; An, 2024; Gawel, 2023).

The findings also support an integrated conceptual framework that explains the interaction among digital infrastructure, governance, audience development, preservation, institutional collaboration, and financial sustainability. Existing theoretical perspectives consistently conceptualize sustainability as an organizational objective that simultaneously incorporates cultural preservation, social inclusion, organizational resilience, and economic viability (Hajura, 2022; Lasally et al., 2023; An, 2024). Within this framework, digital infrastructure functions as the enabling foundation that supports access, preservation, and service delivery, while governance provides the institutional mechanisms through which digital initiatives remain aligned with organizational missions, public policies, and legal responsibilities. Audience development contributes by expanding participation through inclusive and mobile-first engagement strategies, whereas institutional collaboration strengthens resource sharing, interoperability, and collective learning. Financial sustainability

emerges through diversified funding sources, digital business models, strategic partnerships, and efficient resource utilization rather than through technology alone (Booth et al., 2021; Mariano & Vårheim, 2021; Cerquetti et al., 2023).

Open-data ecosystem perspectives further strengthen this interpretation by emphasizing that digital transformation increasingly occurs within collaborative institutional networks rather than individual organizations. Shared repositories, interoperable metadata, coordinated governance arrangements, and cross-sector partnerships enable museums, libraries, archives, and cultural organizations to improve discoverability, reduce duplication of effort, and enhance long-term digital stewardship. Likewise, commons-based perspectives conceptualize digital cultural heritage as a collectively governed public resource, encouraging participatory stewardship, knowledge sharing, and equitable access while balancing public value with institutional sustainability (Pesce, 2024; Avdikos et al., 2024). These theoretical perspectives collectively suggest that sustainable digital transformation depends upon institutional ecosystems rather than isolated technological investments.

From an Indonesian policy perspective, the synthesis highlights several strategic priorities for strengthening sustainable digital transformation. First, national policies should promote stronger interinstitutional collaboration by expanding shared digital infrastructure, national cultural repositories, and interoperable information systems capable of supporting museums, archives, libraries, galleries, and community-based cultural organizations. Existing initiatives such as Indonesia OneSearch illustrate the potential benefits of collaborative digital ecosystems, yet their long-term sustainability requires coordinated governance, standardized metadata, and continuous institutional commitment (Manaf, 2008; Dewanto & Saragih, 2024; Hasssan et al., 2024).

Second, metadata standardization and interoperability should become national priorities because they directly influence discoverability, preservation quality, and cross-institutional collaboration. Standardized metadata frameworks facilitate information exchange among institutions while reducing barriers to digital preservation and long-term collection management (Pandey & Kumar, 2023; Nogueira et al., 2023; Salse et al., 2022). Third, sustained investment in human-resource development remains essential. Digital transformation requires professionals capable of managing digitization workflows, metadata, digital repositories, preservation planning, copyright governance, and audience analytics. Current evidence indicates that uneven professional capacity remains a major constraint within Indonesian GLAM institutions, reinforcing the need for systematic education, technical training, and continuous professional development (Kamaludin, 2021; Beltz & Reumont, 2023; Manaf, 2008).

The review also indicates that sustainable financing should accompany technological development. Hybrid funding models that combine public investment, institutional partnerships, philanthropic support, sponsorship, memberships, and digital revenue streams provide greater resilience than reliance on single funding sources. At the same time, policies governing copyright, licensing, royalty management, and digital asset commercialization should balance economic sustainability with cultural integrity and public accessibility. Recent discussions concerning digital business models and Industry 5.0 suggest that innovation should remain closely aligned with heritage values,

ensuring that commercialization does not undermine preservation objectives or public trust (Botti & Baldi, 2024; Spena et al., 2022).

Despite substantial progress, several important research gaps remain. Existing literature is dominated by short-term case studies conducted during or immediately after the COVID-19 pandemic. Longitudinal research is needed to evaluate how digital maturity develops over time and how technological investments influence organizational sustainability across social, cultural, financial, and governance dimensions. Comparative studies involving Indonesian museums, galleries, festivals, archives, and community-based cultural organizations would further clarify how institutional contexts shape digital transformation outcomes (Fauzi et al., 2022; Duester et al., 2023; Gawel, 2023; An, 2024).

Future studies should also develop comprehensive evaluation frameworks that integrate quantitative indicators such as digital reach, audience engagement, retention, and collection use with qualitative assessments of governance quality, organizational learning, leadership effectiveness, and collaborative capacity. Such mixed-method approaches would provide a more holistic understanding of digital maturity and organizational resilience than reliance on technological indicators alone (Cerquetti et al., 2023; Booth et al., 2021; Mariano & Vårheim, 2021). Additional attention should be directed toward metadata interoperability, open-data ecosystems, blockchain, artificial intelligence, non-fungible tokens, and other emerging technologies, particularly regarding their implications for digital preservation, ethical governance, intellectual-property management, and environmental sustainability (Ratten, 2024; Salse et al., 2022).

Finally, the evidence consistently cautions that digital transformation should not be regarded as a universal solution to the challenges confronting cultural institutions. Sustainable transformation depends upon balancing digital innovation with physical cultural experiences, strengthening governance and leadership, protecting cultural authenticity, ensuring equitable access for urban and rural communities, and embedding technological change within broader organizational and policy frameworks. Indonesian cultural institutions therefore require integrated strategies that combine digital infrastructure, organizational capacity, collaborative governance, inclusive audience development, digital preservation, and sustainable financing. When these dimensions operate collectively, digital transformation becomes a strategic mechanism for strengthening the long-term resilience and sustainability of cultural institutions while preserving Indonesia's diverse cultural heritage in an increasingly digital society.

CONCLUSION

This literature review examined how digital transformation contributes to the organizational sustainability of cultural institutions in Indonesia by synthesizing scholarly publications, policy documents, institutional reports, and international evidence published between 2020 and 2025. The review demonstrates that digital transformation has evolved beyond a temporary response to the COVID-19 pandemic into a strategic organizational capability that influences the long-term resilience, accessibility, and sustainability of museums, galleries, archives, performing arts organizations, festivals, libraries, and other cultural institutions.

The synthesis reveals that sustainable digital transformation depends on the interaction of multiple organizational dimensions rather than on technological adoption alone. Digital infrastructure expands public access to cultural resources and enables hybrid service delivery, while organizational governance provides the strategic direction, accountability, and leadership necessary for long-term implementation. Human-resource development strengthens institutional capacity through digital competencies in metadata management, digital preservation, data governance, and audience engagement. At the same time, audience-centered strategies including mobile-first services, interactive digital platforms, and hybrid participation models enhance cultural accessibility and encourage broader public engagement. Digital preservation, supported by standardized metadata, interoperable repositories, and long-term governance mechanisms, further ensures the protection and continued accessibility of Indonesia's tangible and intangible cultural heritage.

The review also demonstrates that organizational sustainability is reinforced through collaborative governance. Interinstitutional partnerships, shared digital infrastructures, open-data ecosystems, and interoperable repositories improve resource efficiency, knowledge exchange, and long-term stewardship of cultural assets. These collaborative approaches are particularly relevant for Indonesia, where institutional capacity, funding availability, and technological readiness vary considerably across regions and organizations. Consequently, digital transformation should be implemented as a coordinated ecosystem involving government agencies, cultural institutions, universities, community organizations, and private-sector partners rather than as isolated institutional initiatives.

From a policy perspective, the findings indicate several strategic priorities for Indonesia. Strengthening national digital infrastructure, expanding metadata standardization, improving interoperability among cultural repositories, investing in professional digital competencies, and establishing clear governance for copyright and digital rights management are essential for sustaining digital transformation. Furthermore, hybrid funding models that combine public investment, institutional partnerships, sponsorship, philanthropy, memberships, and digital revenue streams can enhance financial resilience while supporting long-term preservation and public access. These priorities align with Indonesia's broader cultural development agenda, which emphasizes cultural preservation, public participation, institutional strengthening, and digital innovation.

The principal contribution of this review is the development of an integrated conceptual framework that connects six interdependent dimensions of sustainable arts management: digital infrastructure, organizational governance, digital competence, audience development, digital preservation, and collaborative governance. Unlike previous studies that often examine these dimensions separately, this review demonstrates that organizational sustainability emerges from their interaction. Digital maturity should therefore be understood as a comprehensive organizational capability that integrates technological innovation with leadership, governance, preservation, financial resilience, and inclusive public engagement.

The review also contributes to the growing body of literature on sustainable arts management by contextualizing international evidence within the Indonesian cultural ecosystem. By combining global scholarship with Indonesian policy documents, national cultural statistics, and regional digital initiatives, the study offers a context-sensitive framework that can support policymakers, cultural managers, researchers, and practitioners in planning future digital transformation

initiatives. The proposed framework provides a foundation for evaluating institutional digital maturity while simultaneously addressing broader sustainability objectives encompassing organizational, cultural, social, technological, economic, and environmental dimensions.

Nevertheless, several limitations should be acknowledged. As a literature review, the study relies on published evidence rather than primary empirical data. The availability of Indonesia-specific longitudinal research remains limited, particularly regarding organizational performance, financial sustainability, digital audience behavior, and long-term preservation outcomes. In addition, differences in institutional contexts, governance arrangements, and funding systems across countries may limit the direct transferability of some international findings to Indonesian cultural institutions.

Future research should therefore move beyond descriptive analyses toward empirical evaluation of digital maturity and organizational sustainability across Indonesian cultural institutions. Longitudinal studies are needed to assess how digital capabilities evolve over time and how they influence institutional resilience, public participation, preservation effectiveness, and financial performance. Comparative research involving museums, galleries, performing arts organizations, festivals, archives, libraries, and community-based cultural organizations would further clarify sector-specific challenges and opportunities. Additional investigation into emerging technologies including artificial intelligence, blockchain, immersive media, and advanced digital preservation systems will also help inform future policy and management strategies while ensuring that technological innovation remains aligned with cultural authenticity, ethical governance, and sustainable development.

Overall, this review concludes that digital transformation should no longer be viewed merely as a technological modernization agenda. Instead, it represents a strategic organizational process that enables Indonesian cultural institutions to strengthen resilience, preserve cultural heritage, expand inclusive public participation, and enhance long-term sustainability. When supported by effective governance, collaborative partnerships, professional competencies, sustainable financing, and robust preservation strategies, digital transformation can become a key driver of a more resilient, innovative, and sustainable cultural ecosystem in Indonesia.

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