



INTERNATIONAL JOURNAL OF
INNOVATION AND
INDUSTRIAL REVOLUTION
(IJIREV)
www.ijirev.com



ANALYZING TECHNOLOGICAL ADAPTATION NEEDS OF VISUAL ART ORGANIZATIONS IN KELANTAN THROUGH A CULTURAL SUSTAINABILITY LENS

Nadya Ahmad Kamal¹, Tan Tse Guan^{2*}, Tengku Fauzan Tengku Anuar³, Arif Datoem⁴

¹ Faculty of Creative Technology and Heritage, Universiti Malaysia Kelantan, Malaysia
Email: nadya.ak@umk.edu.my

² Faculty of Creative Technology and Heritage, Universiti Malaysia Kelantan, Malaysia
Email: tan.tg@umk.edu.my

³ Faculty of Creative Technology and Heritage, Universiti Malaysia Kelantan, Malaysia
Email: tengkufauzan@umk.edu.my

⁴ Faculty of Creative Technology and Heritage, Universiti Malaysia Kelantan, Malaysia
Email: arif.d@umk.edu.my

* Corresponding Author

Article Info:

Article history:

Received date: 23.09.2025

Revised date: 10.10.2025

Accepted date: 01.12.2025

Published date: 12.12.2025

To cite this document:

Kamal, N. A., Tan, T. G., Tengku Anuar, T. F., & Datoem, A. (2025). Analyzing Technological Adaptation Needs of Visual Art Organizations in Kelantan Through a Cultural Sustainability Lens. *International Journal of Innovation and Industrial Revolution*, 7 (23), 250-258.

DOI: 10.35631/IJIREV.723017

This work is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)



Abstract:

This concept paper discusses the need for technological adaptation in visual art organizations through the theoretical framework of *Culture in, for, and as Sustainable Development* proposed by Dessein, Soini, Fairclough, and Horlings in 2015. While digital technologies such as virtual exhibitions, online marketing, and digital archiving have expanded access and continuity in the arts, they also pose challenges for organizations in culturally rooted contexts such as Kelantan, Malaysia. Existing studies on adaptation in the creative industries often focus on innovation, organizational management, or the creative economy, but give limited attention to culture as the foundation of sustainability. This paper argues that culture should be positioned not as a supplementary element but as the center of sustainable development in the arts. By employing the three dimensions of the framework; *culture-in* (culture as a fundamental component), *culture-for* (culture as a driver of development), and *culture-as* (culture as the very framework of development), this paper provides a conceptual lens to analyze the technological adaptation needs of local visual art organizations. The discussion highlights the importance of heritage preservation, the mobilization of culture for economic and social purposes, and the alignment of innovation with local identity. This framework also offers practical implications for policy, strategy, and future research.

Keywords:

Cultural Sustainability; Technological Adaptation; Visual Art Organizations; Kelantan; *Culture In/For/As* Framework

Introduction

The development of digital technology in the last two decades has brought significant changes to the landscape of visual arts, both globally and locally. Art organizations including galleries, associations, and collectives are confronted with the urgent need to adapt to new forms of art delivery such as virtual exhibitions, digital marketing, and archive documentation based on technology platforms (Cascio & Montealegre, 2016). While this technology opens up access and continuity for artistic activities, it also poses challenges, particularly for visual art organizations in rural areas such as Kelantan, which possess strong cultural roots and identity. Studies on technological adaptation in the creative industry have often focused on aspects of innovation (Rogers, 2003), organizational management (Barney & Hesterly, 2019), or the creative economy (Throsby, 2001). However, there is a lack of literature that specifically emphasizes the cultural dimension as a basis for understanding the adaptation process. In fact, culture is not merely a supplementary element in development but has also been recognized as the “fourth pillar” of sustainable development (Hawkes, 2001).

In the context of Kelantan, visual art organizations cannot simply replicate digital strategies used in metropolitan centers such as Kuala Lumpur. Instead, technological adaptation must be guided by local cultural values, community identity, and artistic heritage, which form the core strength of the state’s art ecosystem (Abdullah et al. 2022; Muliyadi, 2004). Therefore, there is a need to examine how a culture-centered theoretical framework can be applied to analyze the technological adaptation needs of local art organizations.

This article proposes the use of the theory *Culture in, for, and as Sustainable Development* introduced by Dessein, Soini, Fairclough, and Horlings which was established in 2015. This theory offers three perspectives; *culture-in* (culture as a fundamental component of sustainability), *culture-for* (culture as a tool to achieve development goals), and *culture-as* (culture as the core of development itself). By employing this theoretical framework in a comprehensive manner, this study aims to evaluate the potential application of the concept in analyzing the technological adaptation needs of the local visual art industry, particularly in Kelantan.

Literature review

Several local studies have highlighted the importance of culture within the framework of sustainability, particularly in the domains of art and heritage. For instance, the study by Wan Abdullah Thani (2021) emphasized how art and culture in Malaysia face challenges brought by technology and modernity in the effort to preserve identity and cultural heritage. Although it does not explicitly employ the framework of *Culture in, for, and as Sustainable Development*, the discussion underscores culture as a key factor in ensuring the continuity of artistic and cultural development. In another study, Mohamed Yusof et al. (2019) assessed the level of sustainability awareness among Malaysian traditional crafts practitioners. The findings revealed that most practitioners had limited understanding of the relationship between

sustainability and cultural preservation, indicating the need to strengthen awareness of culture as a fundamental element of sustainable development.

In addition, Chan et al. (2021) study on an arts hub in George Town highlighted the role of art organizations as creative social entities that face multiple challenges, including economic, community, and managerial aspects. While not based on a specific cultural theory, the study illustrates how arts and culture can serve as drivers of social and economic development, aligning with the dimension of *culture-for*. In the context of traditional performing arts, Lin et al. (2023) research on Teochew Opera in Malaysia explored how this traditional art form integrates modern and traditional elements to ensure its continuity. This approach demonstrates how culture can serve as the core of sustainability strategies, in line with the notion of *culture-as*.

From the perspective of contemporary art, the study by Mohd Rathi et al. (2025), which examined the use of plastic waste as an art medium, revealed how environmental sustainability issues can be integrated into visual art practices. Although the focus of this study leaned more toward the ecological dimension, it nonetheless reflects the close interrelationship between creativity, culture, and sustainability. Taken together, these studies affirm that the discourse on cultural sustainability has begun to gain traction within the Malaysian context. However, there remains a lack of studies that specifically emphasize technological adaptation in visual arts, guided by a structured cultural theory. This gap is precisely what the present article aims to address.

Culture as a Pillar of Sustainable Development

Discussions on sustainable development were initially centered on three main dimensions: economy, society, and environment, particularly after the publication of the Brundtland Report in 1987. Within this early framework, culture was often implicitly subsumed under the social dimension without being given equal emphasis. However, scholars and cultural practitioners began to stress that without culture, development cannot be considered truly sustainable, as communities would lose their identity, values, and the meanings that bind their lives. This awareness led to the emergence of the discourse on culture as the “fourth pillar of development”, articulated most clearly by Jon Hawkes (2001) in his work *The Fourth Pillar of Sustainability*. Hawkes argued that culture is equally as important as economy, society, and environment because it forms the basis of community cohesion and the marker of collective identity. This view was further reinforced by Throsby (2001) through the concept of *cultural capital*, which underscores the importance of cultural heritage and non-economic values in ensuring societal sustainability. Furthermore, the attempt to structure the role of culture in development is evident in the work of Soini and Birkeland (2014), who examined the literature on cultural sustainability. They identified seven key storylines frequently employed in academic discourse: heritage, vitality, diversity, locality, eco-cultural resilience, economic viability, and eco-cultural civilization. This study provided an important foundation in demonstrating the diversity of ways culture is understood within the context of development.

Out of this discourse emerged a major European research project, COST Action IS1007: Investigating Cultural Sustainability (2011–2015), which brought together hundreds of scholars and practitioners from various disciplines. The project culminated in the influential report by Dessein, Soini, Fairclough, and Horlings (2015), which introduced the framework of *Culture in, for, and as Sustainable Development*. This framework categorizes the role of culture

into three primary positions: as a fundamental component of sustainable development (*culture-in*), as a tool to achieve development goals (*culture-for*), and as the framework of development itself (*culture-as*). The framework is significant because it not only strengthens the position of culture in development but also provides clearer conceptual categories for analyzing the role of culture across diverse contexts. Since its introduction, the theory has been widely applied in fields such as urban planning, tourism, cultural and arts policy, and has also been referenced in discussions on technological challenges within the creative industries. The framework by Dessein et al. (2015) also complements Throsby's (2008) concept of cultural capital, which situates culture as a renewable resource that sustains both social and economic vitality. Similarly, Kagan's (2018) idea of eco-cultural resilience underscores the adaptive relationship between culture, ecology, and technology, suggesting that sustainable digital practices must reinforce rather than replace cultural ecosystems. Together, these perspectives enrich the theoretical grounding of cultural sustainability within technological adaptation. In the context of visual arts in Kelantan, the framework offers a conceptual lens well-suited to evaluating how art organizations can adapt to technological change while preserving their cultural roots.

The Theory of *Culture in, for, and as Sustainable Development*

The report by Dessein, Soini, Fairclough, and Horlings (2015) was a pivotal moment in introducing the framework of *Culture in, for, and as Sustainable Development*. This theory emphasizes three ways in which culture can function within the context of sustainable development, as illustrated below:

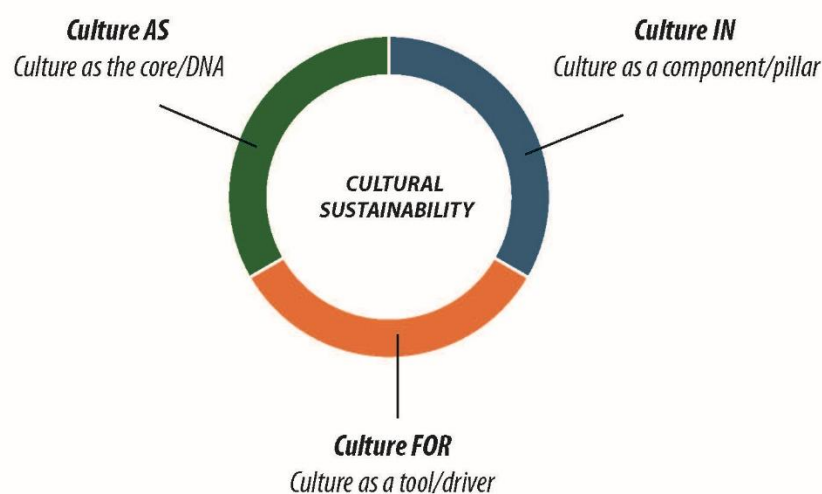


Figure 1: Dessein, Soini, Fairclough dan Horlings (2015) Theory of Culture in, for, and as Sustainable Development.

The first component; *Culture in Sustainability* refers to the position of culture as one of the fundamental components of sustainable development, on par with the economic, social, and environmental dimensions. Within this framework, culture is seen as essential for ensuring that identity, heritage, and local traditions are preserved amidst the currents of modern development (Soini et al., 2015).

Culture for Sustainability situates culture as a tool or driver for achieving development goals. Through this perspective, the arts, traditions, and cultural expressions are actively mobilized to support economic, social, and educational objectives (Soini et al., 2015; Duxbury, Kangas & De Beukelaer, 2017).

Culture as Sustainability provides a deeper interpretation in which culture is no longer regarded merely as an additional element or instrument, but as the very foundation and framework of development itself. This approach emphasizes that all forms of development must be guided by the values, meanings, and worldviews of local culture (Soini et al., 2015; Dessein et al., 2016).

Conceptual Discussion

The theoretical framework proposed by Dessein, Soini, Fairclough, and Horlings (2015) is important because it offers an analytical lens that is flexible yet firmly rooted in culture. In the context of local visual arts such as Kelantan, the challenge of technological adaptation cannot simply be measured in terms of organizational efficiency or alignment with global trends. Rather, it must be assessed in terms of whether the adaptation preserves, drives, and is ultimately guided by local culture. In other words, the *in, for, as* framework enables the identification of technological adaptation needs that are unique to visual art organizations deeply rooted in local cultural identity.

Table 1: Application of Culture in, for, and as Sustainable Development in Analyzing Technological Adaptation Needs

Dimension	Main Focus	Application in Technological Adaptation	Specific Needs for Visual Arts Organizations
Culture in Sustainability	Culture as a fundamental component of sustainable development	Safeguarding identity, heritage, and traditions through technology	Digitization of art archives, exhibition catalogues, and documentation of local art history to ensure continuity of cultural memory
Culture for Sustainability	Culture as a tool/driver to achieve development goals	Using arts and cultural expressions for economic, social, and educational purposes via digital platforms	Virtual exhibitions, social media promotion, art e-commerce, and digital arts education modules to expand audience reach and generate creative economy
Culture as Sustainability	Culture as the core/DNA of development	Development guided by local cultural values, meanings, and worldviews	Design of digital platforms aligned with local identity, such as Kelantanese language, traditional art

			symbols, and culturally grounded aesthetics
--	--	--	---

First, *Culture in Sustainability* emphasizes that culture is one of the fundamental components of development that cannot be disregarded. In the context of technological adaptation, this means that efforts to introduce digital innovations in visual arts must take into account the preservation of local identity and heritage. For example, the digitization of art archives, exhibition catalogues, or documentation of local art history not only functions as a record but also as a mechanism to ensure the continuity of cultural memory. This need is particularly crucial for art organizations in Kelantan, which possess rich artistic traditions and exhibition histories but are often marginalized in systematic documentation processes.

Second, *Culture for Sustainability* views culture as a tool or driver to achieve development goals. In the digital era, technology can be leveraged to expand the reach of the arts, enhance audience engagement, and open new economic opportunities for visual art organizations. The most evident examples include the use of social media, virtual exhibitions, and art e-commerce platforms to introduce works to broader markets. From this perspective, the need for technological adaptation is not only tied to the operational survival of organizations but also to how culture can be mobilized for arts education, community engagement, and the sustainability of the creative economy.

Third, *Culture as Sustainability* brings the discussion to a deeper level by positioning culture as the very core and framework of development. In this dimension, technology is not merely a neutral medium but must be shaped and utilized based on the values and meanings of local culture. For instance, in the context of Kelantan, digital platforms for exhibitions or art promotion should not simply replicate models from metropolitan centers but must instead reflect local identity whether through language, visual aesthetics, traditional symbols, or communication styles that resonate with the community. This need underscores that digital transformation can only be truly sustainable when it is guided by the cultural DNA of the community.

Overall, this conceptual discussion demonstrates that the theory of *Culture in, for, and as* can serve as an integrated framework for assessing the technological adaptation needs of visual art organizations. Through these three complementary lenses, it becomes clear that art organizations require not only digital infrastructure to document heritage (*in*), but also strategies to utilize technology for economic and social development (*for*), along with guidelines to ensure that digital innovations align with local cultural identity (*as*). This framework thereby provides a foundation for the development of policies, organizational strategies, and future empirical studies that position culture as the core of technological adaptation processes. While digital adaptation and technology enhances visibility and accessibility, it also risks commodifying cultural heritage by reducing traditional art to market-oriented content. As Kagan (2018) cautions, technological mediation may erode the contextual meanings embedded in local practices. To mitigate this, art organizations should adopt a reflexive curatorial approach, using digital tools to document, interpret, and educate rather than commercialize cultural expressions. In this sense, technological innovation should serve as a means of cultural continuity, not commodification.

Academic and Practical Implications

The framework of *Culture in, for, and as Sustainable Development* provides several important implications from both academic and practical perspectives. Academically, it broadens the discourse on technological adaptation in visual arts, which has so far been dominated by perspectives of innovation and economics. By employing a cultural lens, this study contributes to a more holistic understanding of how technology functions not merely as a neutral medium but also as a space where values, identity, and local heritage are negotiated. Furthermore, the study supports academic efforts to position culture at the heart of sustainable development analysis, thereby reinforcing the status of culture as the fourth pillar of development, which has gained increasing attention in international literature (Hawkes, 2001; Throsby, 2001; Soini et al., 2015).

From a practical standpoint, the framework offers clear guidance for visual art organizations in planning technological adaptation strategies. Through the *culture-in* dimension, organizations can emphasize the need to digitize art archives and exhibition documentation as a means of safeguarding cultural memory. The *culture-for* dimension assists organizations in leveraging technology to expand audience networks, strengthen arts education, and generate economic resources through digital platforms. Meanwhile, the *culture-as* dimension highlights the importance of local identity and values in every form of technological innovation, ensuring that transformation processes do not neglect the cultural DNA of the community. In this way, the framework has the potential to serve as a reference for policy and practice in the visual arts sector, particularly in regions rich in tradition but less exposed to mainstream digital ecosystems.

Recommendations for Future Research

As a concept paper, this article serves as a conceptual foundation for understanding the relationship between culture and technological adaptation in visual arts. However, further research is needed to test the effectiveness of the *in, for, and as* framework in empirical contexts. Possible directions include case studies of art organizations in different regions, comparisons between urban and rural contexts, and longitudinal analyses of art digitization strategies. Such future studies would not only strengthen the validity of the framework but also provide more concrete practical evidence for policymakers, art institutions, and creative communities. Future empirical research could operationalize the *Culture in, for, and as* framework through measurable indicators, such as documentation of cultural heritage (*culture-in*), digital engagement metrics for community education and participation (*culture-for*), and qualitative assessments of local identity representation in digital platforms (*culture-as*). These could be explored using thematic coding or policy analysis to assess how cultural values shape digital transformation in the arts sector.

Conclusion

This article has discussed the need for technological adaptation in visual art organizations through the framework of *Culture in, for, and as Sustainable Development* (2015). By focusing on the three main dimensions; culture as a fundamental component, as a tool for development, and as the core of development, this framework enables a more in-depth assessment of the needs of art organizations in the digital era. The conceptual discussion demonstrates that technological adaptation in visual arts is not merely a matter of technical efficiency but also involves questions of heritage preservation, the mobilization of culture for economic and social purposes, and the alignment of innovation with local identity. Thus, culture is no longer seen

as a supplementary element but as the center that guides the direction of sustainable development in the field of visual arts (Kagan, 2018; Wan Abdullah Thani, 2021).

The applicability of the framework may vary across contexts; urban art institutions may prioritize technological efficiency, whereas rural organizations such as those in Kelantan emphasize cultural preservation. Similarly, traditional art sectors often face different adaptation pressures than contemporary digital arts, suggesting a valuable avenue for comparative study. Overall, this article contributes to the literature by emphasizing the importance of culture as the foundation for analyzing technological adaptation, while also providing a conceptual basis that can be utilized by academics, art practitioners, and policymakers. At the same time, it opens avenues for further empirical research to strengthen the application of this theory within the context of local visual art organizations.

Acknowledgements

The authors would like to acknowledge and extend special gratitude to the Faculty of Creative Technology and Heritage, Universiti Malaysia Kelantan for the continuous support throughout this study.

References

- Abdulah, N. H., Yusoff, M. Y. M., Ibrahim, D., Zin, W. N. A. W. M., & Roshdi, S. M. (2022). The Development of Visual Art in Malaysia: Focus on Traditional Element. *International Journal of Art and Design*, 6(2/SI), 1-11.
- Barney, J. B., & Hesterly, W. S. (2019). *Strategic management and competitive advantage: concepts and cases*. Pearson.
- Cascio, W., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior*.
- Chan, J. H., Chen, S. Y., Piterou, A., Khoo, S. L., Lean, H. H., Hashim, I. H. M., & Lane, B. (2021). An innovative social enterprise: Roles of and challenges faced by an arts hub in a World Heritage Site in Malaysia. *City, Culture and Society*, 25, 100396.
- Dessein, J., Battaglini, E., & Horlings, L. (2016). *Cultural sustainability and regional development*. Routledge. London. <https://doi.org/10.4324/9781315737430>.
- Duxbury, N., Kangas, A., & De Beukelaer, C. (2017). Cultural policies for sustainable development: Four strategic paths. *International Journal of Cultural Policy*, 23(2), 214–230.
- Hawkes, J. (2001). *The fourth pillar of sustainability: Culture's essential role in public planning*. Cultural Development Network.
- Kagan, S. (2018). Culture and the arts in sustainable development: Rethinking sustainability research. In *Sustainability Science* (pp. 65–86). Routledge. <https://doi.org/10.4324/9781351124300-11>
- Lin, Ziqiao & Ang, Mei. (2025). Coexistence of Tradition and Modernity for Cultural Sustainability: The Teochew Opera Approach in Malaysia. *Arts*. 14. 110. 10.3390/arts14050110.
- Mohamed Yusof, S. A., Stuart, Walker. (2019). Evaluating sustainability awareness among Malaysian traditional crafts stakeholders. *International Journal of Academic Research in Business and Social Sciences*, 9(9), 620–634. Universiti Teknologi MARA Institutional Repository. <https://ir.uitm.edu.my/id/eprint/34126>

- Mohd Rathi, M. R., Abu Bakar, M. F., Wasli, Z., Jimel, C., Michael, V. (2025). Plastic waste art medium: the integration of sustainability in contemporary Malaysian art. *International Journal of Research and Innovation in Social Science*, IX(I)
- Muliyadi Mahamood. (2004). *Seni lukis moden Malaysia: Era perintis hingga era pluralis (1930–1990)*. Dewan Bahasa dan Pustaka.
- Soini, K., & Birkeland, I. (2014). Exploring the scientific discourse on cultural sustainability. *Geoforum*, 51, 213–223.
- Soini, K., Battaglini, E., Birkeland, I., Duxbury, N., Fairclough, G., Horlings, L., & Dessein, J. (2015). *Culture in, for and as sustainable development: Conclusions from the COST Action IS1007 Investigating Cultural Sustainability* (pp. 1-73). University of Jyväskylä.
- Throsby, D. (2008). *The Economics of Cultural Policy*. Cambridge University Press
- Wan Abdullah Thani, W. J. I. (2021). The sustainability of art and culture: The Malaysia perspective. In *Proceedings of the 2nd International Conference on Humanities, Social Sciences and Environment* (pp. 1–7). EUDL. <https://doi.org/10.4108/eai.4-11-2020.2308899>