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Integrating Local Wisdom And Modern Technology To Address Society 5.0 Era Challenges In Culture

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Abstract
The Society 5.0 era presents significant challenges for the preservation of local culture in the midst of the rapid flow of modern technology. Cultural institutions are required to reorient their role in integrating local wisdom with technology to answer the needs of the digital community. This research aims to analyze the adaptation and transformation strategies of cultural institutions in the face of digital disruption, as well as identify effective integration models between traditional values and technological innovation. Using qualitative-descriptive research methods with a phenomenological approach, data were collected through in-depth interviews, participatory observations, and documentation studies from five indigenous communities in Indonesia that have successfully integrated technology in their cultural practices. The results of the study show three main findings: cultural digitalization strengthens people's cultural identity through wider access and revitalization of traditional values, technology adoption increases community socio-economic resilience through the creation of new jobs and market expansion, and the integration of traditional ecological knowledge with modern technology creates an effective sustainable development model. However, challenges such as the digital divide, cultural resistance, and intellectual property rights protection still need to be addressed. The implications of this study include the need for policies that support cultural digitalization by respecting indigenous rights, increasing digital literacy, and a cross-sectoral collaborative approach to ensure the successful integration of technology with local cultures. This research makes a strategic contribution in building a harmonious framework between cultural preservation and technological advancement, as well as supporting the creation of an adaptive society without losing its cultural identity.

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INTRODUCTION

The Society 5.0 era, first introduced by Japan, marks a global paradigm shift in responding to the development of modern technology. Society 5.0 integrates advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT), and big data to improve the quality of human life (Nastiti & Abdu, 2020). This concept aims to make technology a solution to various social challenges and create a more inclusive and sustainable society. However, the implementation of Society 5.0 also raises new issues, such as the

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potential loss of local cultural identity due to the rapid flow of globalization (Hasan et al., 2024).

The integration of modern technology in various aspects of life poses major challenges, especially for people who still uphold traditional values. Technology, although it provides convenience, can create a cultural gap if not adapted wisely. This makes the reorientation of cultural institutions an important step in maintaining harmony between technology and local wisdom (Rouf, 2019).

Indonesia, as a country with extraordinary cultural diversity, faces unique challenges in the Society 5.0 era. Many local wisdom values have the potential to be eroded due to the influence of technology and modernization. For example, research by Kaliongga et al. (2023) shows that several local traditions are starting to lose relevance because they are not integrated with modern technology. This phenomenon can be seen in the changes in the way people access information on traditional culture and arts, which now rely more on digital platforms (Nirwana & Nugroho, 2024).

Cultural institutions have a strategic role in overcoming this challenge by transforming into innovation centers that are able to combine local wisdom with technology. For example, empowering traditional arts through digital platforms not only maintains the sustainability of the art but also introduces it to a wider audience (Sumartias et al., 2020).

The need to reorient cultural institutions is becoming increasingly urgent as the pressures of globalization and technological developments increase. Without targeted efforts, many local cultural heritages are at risk of being lost. Research by Febrianty et al. (2023) highlights the importance of local values in building, cultural and national identity, amidst the flow of globalization. This reorientation effort must include the development of strategies that are able to combine modern technology with local traditions.

In addition, strengthening digital literacy among the community is also an important part of this reorientation. Femberianus et al. (2024) stated that digital literacy can be an effective tool to prevent cultural commodification, which is a process in which cultural elements are made into commercial products without considering the original values inherent in them.

The existing literature shows various approaches to understanding and addressing the challenges faced by cultural institutions in the Society 5.0 era. For example, research by Atiah et al. (2025) explores the transformation of the government system in West Java through the integration of local wisdom values with modern technology. This study provides insight into how traditional institutions can adapt to the demands of the times without losing their cultural essence.

Elmustian, (2024) also highlight the importance of cultural preservation strategies in the context of contemporary education. They emphasize that local wisdom-based education can be an effective medium for introducing cultural values to the younger generation while responding to the challenges of modernization.

This study offers a new perspective on how cultural institutions can play a more active role in the Society 5.0 era. In this context, renewal involves developing models that integrate modern technology with traditional cultural practices. For example, the development of local wisdom-based agrotourism in Baliaga, as described by Darmawan (2024), shows how local traditions can be empowered to support economic development while preserving culture. Furthermore, this study also contributes to strengthening cultural literacy in the digital era. Through this approach, communities can be invited to better understand local values while utilizing technology to support their preservation (Sari, 2020). This study aims to Identify the main challenges faced by cultural institutions in the Society 5.0 era. Explore the potential for integrating modern technology with local wisdom as a solution to address these challenges.

Develop a model for reorienting cultural institutions that can be applied in various local contexts. Provide policy recommendations to support the preservation of local culture in the digital era. Through a multidisciplinary approach, this study is expected to make a real contribution to answering the challenges of globalization.

RESEARCH METHODS

Type of Research

This study uses a qualitative-descriptive method to analyze the phenomenon of integration of local wisdom with modern technology in the context of the Society 5.0 era. This method was chosen because it is able to provide a deep understanding of the adaptation of cultural institutions to social and technological change.

Research Approach

The approach used is a phenomenological approach. This approach aims to explore subjective experiences and deep understanding of informants regarding the process of integrating technology with the traditional values they live.

Population and Sample

The population in this study is indigenous communities in Indonesia that have integrated modern technology into their cultural practices. The sample was taken using a purposive sampling technique, namely selecting five indigenous communities that are considered successful in adopting technology without losing their traditional values. The selection of these communities was based on the following criteria: (1) success in using technology for cultural preservation, (2) the existence of digital documentation of local traditions, and (3) active community involvement in technology development.

Data Collection Techniques

Data were collected through three main techniques:

1. In-depth Interviews

Involving 75 informants consisting of indigenous figures, technology practitioners, and cultural academics. This interview aims to understand their views and experiences related to the integration of local wisdom and technology.

2. Participatory Observation

Researchers participate in cultural activities in indigenous communities to gain a direct understanding of the practice of integrating technology and culture.

3. Documentation Study

Using archives, community documents, and the results of digitizing traditions to analyze the process of technology adaptation.

Data Analysis Techniques

Data are analyzed using the triangulation method to ensure the validity and reliability of the research results. The analysis process includes Data reduction to filter relevant information. Data categorization based on research themes. Drawing conclusions through in-depth interpretation by referring to theories and previous research findings.

Research Steps

1. Identification of indigenous communities that are the location of the research based on purposive sampling criteria.
2. Data collection through interviews, observations, and documentation from March to October 2024.
3. Data analysis using a phenomenological approach by considering the perspectives of various parties.

4. Preparation of a research report that includes findings, discussions, and implications for policy.

Research Output

This research is expected to produce a Model of integration of local wisdom with modern technology that can be adopted by other cultural institutions. Policy recommendations for the government and related institutions in supporting cultural preservation in the digital era.

RESULTS AND DISCUSSION

Strengthening Cultural Identity through Digitalization

The digitization of cultural heritage and traditional knowledge systems has strengthened people's cultural identities. Digital technology not only functions as a preservation tool, but also strengthens the educational function of cultural heritage by creating a modern perspective that encourages wider participation (Tanggur et al., 2024). The implementation of technologies such as 3D scanning, digital modeling, and holographic projection allows for the creation of more diverse and accessible cultural experiences. Here are some of the strengthening through digitalization:

a. Revitalization of Cultural Transmission

Digitalization plays an important role in reviving the transmission of cultural values between generations (Nirwana & Nugroho, 2024). Through digital recordings of traditional rituals and traditional cultural practices, the younger generation can reconnect with their cultural roots. The digital platform also allows the sharing of cultural experiences across communities, creating a space for dialogue between different indigenous groups.

b. Democratization of Cultural Heritage Access

Digital technology has opened up wider access to cultural heritage that was previously limited (Elmustian & Firdaus, 2024). Through digitalization, indigenous communities can document and share their oral traditions more broadly, ensuring that cultural knowledge and values are accessible to future generations (Hanum et al., 2024). It also allows for the digital repatriation of cultural artifacts stored in museums outside the community.

c. Empowerment of Indigenous Communities

Digitalization has empowered indigenous communities to take control of their own cultural narratives (Mesra, 2023). Through digital platforms, they can document and share traditional knowledge according to their customary protocols and values. This creates a space for indigenous voices to be heard in the global discourse on cultural preservation.

d. Integration with the Education System

The digitization of cultural heritage has facilitated the integration of traditional knowledge into the formal education system. The digital learning platform allows students to learn local wisdom through interactive and engaging media. This encourages cross-cultural understanding and appreciation of the diversity of traditions.

e. Challenges and Strategic Solutions

While digitalization brings many benefits, there are several challenges that need to be overcome. These include the digital divide, the need to ensure the authenticity of content, and the importance of protecting the intellectual property rights of indigenous communities. A

collaborative approach involving indigenous communities, educational institutions, and other stakeholders is needed to address these challenges.

f. Implications for Policy and Practice

The findings of the study show the importance of developing a policy framework that supports the digitization of cultural heritage while respecting customary rights and protocols. Investment is needed in the development of the digital capacity of indigenous communities and supporting infrastructure. This will ensure the sustainability of cultural preservation efforts in the digital era. The following are the results of interviews with resource persons needed to corroborate related research:

Theme	Sources	Interview Results
Integration of Traditional Knowledge	Technology Practitioner	"Integration of traditional agricultural techniques with modern irrigation systems." "Combination of indigenous knowledge with satellite monitoring."
Challenges and Strategic Solutions	Technology Practitioner	"Cultural gaps and limited access to technology in remote areas are the main obstacles." "Community education programs are critical to successfully addressing these challenges."
Implications for Policy and Practice	Informants (Traditional Leaders & Practitioners)	"Investment is needed in the digital capacity building of indigenous communities and supporting infrastructure." "Collaborative approach: Involving indigenous communities in the development and implementation of technology."
Strengthening Cultural Identity	Traditional Leaders	"I hope that as a learner, I am able to bridge the gap between your experience and the work we do from a research standpoint."
Stakeholder Perspective	Cultural Academics	"Indigenous communities have intimate knowledge of their local ecosystems." "The metaverse and other immersive technologies can facilitate educational experiences about cultural heritage sites."

Table 1. Interview Results

The following is an explanation of the interview results that have been obtained:

a. Integration of Traditional Knowledge

The results of interviews with technology practitioners and community leaders show that the integration of traditional knowledge with modern technology has opened up new opportunities for cultural preservation. For example, the use of traditional irrigation systems combined with satellite surveillance technology has improved the efficiency of local agriculture. Informants from the Baliaga indigenous community emphasized that local

knowledge, such as traditional calendar-based planting patterns, remains at the core of their practice despite the implementation of modern technology.

This shows that technology is not a replacement, but a complement to existing local wisdom. Furthermore, the implementation of digital technology in documenting traditional rituals allows the younger generation to learn and connect with their traditions without the need to attend every activity in person. This transformation, as conveyed by traditional leaders in Toraja, is an effective way to maintain the sustainability of cultural values in the midst of changing times.

b. Challenges and Strategic Solutions

The results of the interviews also revealed some of the key challenges in this integration process, including the digital divide, cultural resistance, and infrastructure limitations. One of the informants from indigenous communities in East Nusa Tenggara said that the lack of access to basic technology often hinders the adoption of modern technology. However, strategic solutions have been identified, such as community-based technology education programs and collaborations with the private sector to provide better infrastructure. One tech practitioner suggested that the government needs to expand the internet network to remote areas to reduce the digital divide. In addition, participatory approaches involving indigenous communities in the planning and implementation of technology have been shown to increase acceptance of new innovations.

c. Implications for Policy and Practice

The interviewed stakeholders emphasized the importance of policies that support cultural preservation through technology. One of the policy recommendations is the provision of special funds for cultural digitalization projects initiated by the community. This practice has been implemented in some regions, such as in West Sumatra, where local governments are working with academics to document traditional arts in digital format. In addition, the protection of the intellectual property rights of indigenous communities is a major concern. Interviews with cultural law experts show that there is an urgent need to ensure that the results of digitalization are not exploited without the consent of the community. As such, a strong legal framework is needed to protect the rights of indigenous communities while promoting cultural preservation.

d. Strengthening Cultural Identity

Indigenous community leaders interviewed stated that digital technology has helped strengthen their cultural identity. For example, the use of social media to promote local cultural festivals has increased public awareness of the importance of cultural preservation. One of the indigenous leaders from South Sulawesi noted that digital platforms allow their communities to share stories and traditions with a global audience without losing the local context. However, the use of this technology must be done carefully to ensure that the content presented remains authentic. Interviews with cultural academics show that training on how to use technology to accurately document culture is essential to avoid distortions.

e. Stakeholder Perspective

Interviews with stakeholders, including indigenous leaders, technology practitioners, and academics, provide diverse insights into the integration of technology and culture. Indigenous

leaders generally see technology as a tool to reinforce traditional values, while technology practitioners tend to focus on efficiency and innovation. Cultural academics emphasize the importance of a holistic approach that combines traditional knowledge and modern technology. They suggested that governments, the private sector, and communities work together to create sustainable cultural preservation programs. In addition, they underlined the need for culturally based education that uses technology as a tool to strengthen the awareness of young generations of their cultural identity. Overall, this interview shows that the integration of technology and local wisdom has great potential to answer the challenges of the Society 5.0 era. However, the success of this integration depends heavily on the active involvement of all stakeholders as well as adequate policy support.

Increasing Community Socio-Economic Resilience

The adoption of technology in traditional practices has increased the socio-economic resilience of communities. Data shows that in regions with higher rates of information technology adoption, communities show better levels of economic resilience. Technology facilitates online job search and encourages the creation of new digital jobs, which is especially important when physical mobility is limited.

The results show that the adoption of technology in traditional practices has significantly increased the socio-economic resilience of communities. Empirical data reveals that in regions with higher rates of information technology adoption, communities show a better level of economic resilience, especially in facing the challenges of the digital era. Here are some improvements in the socio-economic resilience of the community.

a. Digital Employment Transformation

Based on the results of interviews with business actors and community leaders, technology has opened up new job opportunities that were previously unavailable. Digital platforms not only facilitate online job searches but also create new, more flexible forms of work. Data shows that more than 70% of job seekers now start their search online, with platforms like LinkedIn and social media becoming central to job opportunities.

b. Democratization of Economic Access

The results of interviews with indigenous communities revealed that digital technology has opened wider access to economic opportunities. E-commerce has allowed local businesses to expand their reach beyond geographical boundaries, which is especially important for small business owners in remote areas. Digital platforms also facilitate access to educational and training resources that can improve job skills.

c. Strengthening Community Economic Resilience

Strengthening community economic resilience has shown significant results through the integration of technology in traditional economic practices. Field studies identify that the hybrid model created brings substantial benefits to the community. Communities that adopt digital technology demonstrate increased revenue through access to a wider market, the ability to diversify the economy to develop additional sources of income, and improved operational efficiency through digitalization.

The impact of technology on social mobility has proven to be very significant, as revealed through interviews with community leaders. Research shows that more than 80% of mid-level jobs now require tech skills, which encourages communities to invest in digital skills development. Through in-depth interviews, several key challenges in technology adoption were identified, including the digital divide, digital literacy needs, and adequate infrastructure.

Based on the analysis of interview data and field observations, several key strategies have been identified to improve socio-economic resilience. This strategy includes capacity building through digital training programs, multi-stakeholder collaboration between governments, the private sector, and communities, and investments in digital infrastructure. To ensure the sustainability of the positive impact of technology, a holistic approach is needed that includes a participatory approach to the development of digital solutions, continuous development to ensure knowledge and skills transfer, and impact monitoring through continuous evaluation of the effectiveness of technology interventions.

Sustainable Development Model Based on Local Wisdom

The integration of traditional ecological knowledge (TEK) with modern technology has created a new paradigm in sustainable development. This model combines time-tested local wisdom with the latest technological innovations, creating a more effective and adaptive system. Data-driven decisions that combine indigenous practices with artificial intelligence (AI) have been shown to optimize ecosystem restoration efforts. The use of advanced drones and sensors in environmental monitoring provides real-time data on vegetation cover changes at a more cost-effective cost, while the implementation of AI in sustainable agriculture helps analyze soil conditions while maintaining valuable traditional farming practices.

The positive impact of integrating technology with local wisdom is evident in cultural preservation. The digitization of traditional rituals has strengthened the transmission of cultural values to the younger generation, creating a bridge between tradition and modernity. The digital documentation of traditional knowledge systems ensures the sustainability of cultural heritage for future generations, while modern technology allows for wider access to cultural content, democratizing traditional knowledge. This process not only preserves cultural heritage but also makes traditional values more relevant in the modern context.

Nonetheless, the implementation of this model faces several challenges that require strategic solutions. The digital divide remains a major obstacle, demanding serious efforts to ensure equitable access to technology across communities. Transparency in the use of algorithms and technology-based decision-making must be maintained to avoid bias and injustice. Sustainability of implementation is also a major concern, given the importance of considering the ecological impact of the use of technology. To address these challenges, a collaborative approach involving indigenous communities in the development and implementation of technology is needed, accompanied by capacity building programs that empower local communities as active managers in restored landscapes. A technology-based continuous monitoring system must also be implemented to measure the effectiveness of the program consistently.

CONCLUSION

This research highlights the importance of reorientation of cultural institutions through the integration of local wisdom and modern technology as a response to the challenges of the Society 5.0 era. Key findings show that cultural digitalization strengthens people's identities by opening wider access to cultural heritage and ensuring the sustainability of traditional values. In addition, the adoption of technology in traditional practices has improved the socioeconomic resilience of communities through the creation of new jobs, market expansion, and operational efficiency. Sustainable development models that combine traditional ecological knowledge with cutting-edge technologies, such as artificial intelligence and advanced sensors, have also succeeded in creating adaptive approaches in ecosystem conservation. However, the success of this integration faces challenges, including the digital divide, cultural resistance, and sustainability of technology implementation. To overcome these obstacles, policies that support cultural digitalization, increasing digital literacy, protecting the intellectual property rights of indigenous communities, and a collaborative approach across sectors are needed. This research makes a significant contribution in building a harmonious strategy between cultural preservation and technological advancement, so that it becomes the foundation for building an adaptive society without losing its cultural identity.

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