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Revitalizing the Value of Cireundeu Local Wisdom through the Utilization of Artificial Intelligence Towards a Sustainable Society in the Society 5.0 Era

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Abstract

This research aims to explore the strategy of revitalizing the local wisdom of the indigenous people of Cireundeu through the application of Artificial Intelligence (AI) in the era of Society 5.0, with the goal of supporting sustainable development. Cireundeu's local wisdom, rooted in cassava-based food traditions, harmony with nature, and the value of cooperation, is now facing modernization challenges that have the potential to erode its cultural values. Using a qualitative ethnographic approach, this study employed observation, in-depth interviews, and document analysis to investigate the role of AI in documenting, disseminating, and strengthening local wisdom through digital archiving, AI-based educational applications, and local food security prediction models. The study's results demonstrate that integrating AI and local wisdom not only preserves the cultural identity of indigenous peoples but also contributes to achieving the Sustainable Development Goals (SDGs) in aspects of food security, sustainable development, and responsible consumption and production. Thus, the application of AI in revitalizing local wisdom is a strategic step toward building an adaptive, culturally rooted, and harmonized society within the framework of Society 5.0.

Keywords: *local wisdom, Cireundeu, Artificial Intelligence, Society 5.0, SDGs*

INTRODUCTION

Local wisdom is a cultural heritage that not only preserves traditional values but also encompasses social, economic, and ecological principles relevant to the challenges of modern society. Culture, according to Geertz, (1973) It is a system of conception that is inherited and symbolically expressed, serving as a means for humans to communicate, maintain, and develop their knowledge and attitudes throughout life. This view shows that culture is a system of meaning that gives direction to people's lives. In the context of Indonesia, (Koentjaraningrat, 1990) Emphasizing that local wisdom is reflected in values, norms, and social practices that are inherited between generations, functioning to maintain a balance between humans and their environment. Both views affirm that local wisdom is not a static inheritance, but a living knowledge that is always adaptive to the changing times.

The Cireundeu Traditional Village in Cimahi City, West Java, is an example of the application of local wisdom that has survived and developed sustainably. The people of Cireundeu are known for their consistency in making cassava a staple food to replace rice, which is not just an economic choice, but a form of cultural philosophy of independence and food security. (Irawan et al., 2024; Santoso & Falatehan, 2021; Adiputra et al., 2021). This practice aligns with efforts to

achieve the Sustainable Development Goals (SDGs), particularly Goal 2, which aims to eradicate hunger (Zero Hunger).

Several previous studies have demonstrated that the people of Cireundeu employ a unique adaptation strategy in responding to food and environmental challenges. Dasipah & Iskandar, (2019) Found that the development of cassava agribusiness based on local wisdom has the potential to become sustainable agro-tourism. Adiputra et al., 2021) Reinforcing this finding by stating that the consumption of cassava as a staple food not only meets nutritional needs but also strengthens the cultural identity of the community. (Logayah et al., 2023) Added that Cireundeu's local wisdom can serve as a valuable source of learning in social studies education, supporting the achievement of the 2030 SDGs.

Other research shows that Cireundeu's local wisdom is also experiencing dynamics in the face of modernization. (Sanusi & Sidik, 2022) It noted that despite the process of commodification through cultural tourism, the community still maintains authentic values that strengthen the collective identity. - Stuart O'Neill (2024) Highlighting that the cassava-based culinary tradition in Cireundeu is a form of food heritage that is resilient in the face of globalization and modern food colonialism. Moreover (Primasongko & Raihandhany, 2022) Emphasizing the role of local knowledge in ethnoagricultural practices that maintain ecological balance through sustainable farming patterns.

In a global context, technological developments in the era of the Industrial Revolution 4.0 and the transition to Society 5.0 have changed the way humans interact, work, and preserve culture. Schwab, (2016) Explained that the advancement of digital technology requires the integration of innovation and socio-cultural values so that it is not separated from its human roots. In line with that, the concept of Society 5.0, pioneered by Japan, emphasizes the development of a human-centered society by utilizing technology to solve social problems. (M. Fukuyama, 2018). This view suggests that technology, including artificial intelligence (AI), is not a threat to local culture but rather a means to strengthen and revitalize the values of local wisdom, ensuring its relevance in the digital era.

AI, as put forward by (Russell et al., 2020)It has excellent potential for application in preserving local knowledge through knowledge representation systems. In the context of the indigenous people of Cireundeu, AI can be used to document food traditions, languages, and cultural practices, so that the knowledge can be passed on systematically and easily accessible across generations. UNESCO, 2019) It also affirms that local and indigenous knowledge is an essential source of information for sustainable development, which needs to be protected and revitalized through integration with modern technology.

Based on the study, the primary issue is how to revitalize the local wisdom values of the indigenous people of Cireundeu through the application of artificial intelligence in the era of Society 5.0, thereby supporting the achievement of sustainable development. The purpose of this research is to explore the potential integration of local wisdom and modern technology, particularly AI, in enhancing food security, fostering cultural identity, and preserving the environment. This research is expected to make a theoretical contribution to the development of interdisciplinary studies between culture and technology, as well as practical benefits for indigenous peoples, the education sector, and policymakers.

With reference to classical cultural theories (Geertz, 1973); Koentjaraningrat, 1990) enriched by contemporary literature and current research (Irawan et al., 2024; Adiputra et al., 2021; Logayah et al., 2023; Santoso & Falatehan, 2021; Sanusi & Sidik, 2022; Sumaludin, 2024; Primasongko & Raihandhany, 2022). The novelty of this research lies in the effort to connect the local wisdom of the indigenous people of Cireundeu with artificial intelligence within the framework of Society 5.0 and the SDGs. This integration is a strategic step to build an adaptive, culturally rooted, and sustainability-oriented society.

METHOD

This research employs a qualitative approach with ethnographic methods, aiming to gain a deep understanding of the local wisdom practices, values, and meanings of the indigenous people of Cireundeu in the context of artificial intelligence technology (AI) application in the era of Society 5.0. The ethnographic approach was chosen because it provides space for researchers to be directly involved in the socio-cultural life of the community and interpret phenomena based on the perspective of the cultural actors themselves (Spradley, 2016); Creswell, 2013). This research emphasizes the process of exploring and interpreting social realities as experienced by indigenous peoples, ensuring that the findings obtained are contextual and in-depth.

The research was conducted in Cireundeu Traditional Village, Cimahi City, West Java, a community known for maintaining cassava-based food traditions and upholding the value of harmony with nature. The selection of this location was carried out purposively because the village is considered representative of sustainable local wisdom practices and has potential for integration with modern technology. The research subjects comprise traditional leaders, Cireundeu community members, cultural tourism actors, and local governments that play a role in preserving local wisdom. The researcher acts as the primary instrument of the research by employing the source triangulation technique to enhance the validity of the data. (Miles et al., 2014).

Data collection was conducted through three primary techniques: participatory observation, in-depth interviews, and document analysis. Participatory observation is used to understand people's cultural behaviors and practices in daily life. In-depth interviews were conducted in a semi-structured manner to explore the community's understanding of, values regarding, and perspectives on traditions, as well as the potential applications of AI in cultural preservation. The document analysis includes a review of archives, historical records, government policies, and scientific publications related to Cireundeu Village.

The data obtained were analysed inductively using Miles and Huberman's interactive analysis model, which includes three stages: data reduction, data presentation, and conclusion drawing. (Miles et al., 2014). Data reduction is carried out by selecting important information relevant to the research focus and then presenting it in the form of narrative and thematic categorization to identify patterns of meaning. The conclusions of the research are drawn through a rigorous verification process, ensuring the results have high credibility.

To ensure the validity of the data, this study applied four criteria of *trustworthiness* as stated by (Denzin & Lincoln, 1995), namely credibility, transferability, dependability, and confirmability. Credibility enhancement is achieved through the triangulation of techniques and sources, peer discussion (peer debriefing), and member checking with the main informant. All data

are processed and compiled using NVivo 12 Plus software to assist in the systematic organization and coding of qualitative data.

RESULTS AND DISCUSSION

1. Food Independence Based on Cireundeu Local Philosophy

The results of the study show that the indigenous people of Cireundeu make food independence the core of their social and economic sustainability. The philosophy that is the central holding is ***"Teu Boga Sawah Asal Boga Pare, Teu Boga Beas Asal Bisa Nyangu, Teu Nyangu Asal Dahar, Teu Dahar Asal Kuat"*** Which means *that you don't have a rice field as long as you have rice, you don't have rice as long as you can cook rice, you don't have rice as long as you can eat, you don't eat as long as it's strong".* This phrase is not just a saying, but reflects an **ethos of independence, creativity, and resistance to economic pressure.**

The Cireundeu people replace rice with cassava (also known as yuca or manioc) as a staple food. This choice signifies the ability to adapt to local natural conditions and is a form of *food sovereignty*. (Patel, 2009). In the context of Society 5.0, these values are parallel to the idea of (M. Fukuyama, 2018) A sustainable society must integrate technological innovation without losing social and ecological resilience.

The integration **of Artificial Intelligence (AI)** has the potential to reinforce this value through the development of **AI-based recipe databases and constellation production processes,** as well as ***educational chatbots that transfer knowledge from one generation to the next***. This approach enables the preservation of local food culture while advancing SDG 2 (*Zero Hunger*) and SDG 12 (*Responsible Consumption and Production*).

2. Ecological Harmony and Wisdom of Traditional Spatial Planning

The substance of Cireunde's ecological wisdom is manifested in the customary forest management system, which is divided into three categories: ***"Leuweung Larangan"*** **(protected forest),** ***"Leuweung Tutupan" (Ecosystem Buffer), and "Leuweung Baladahan" (Land Cultivated by Community).*** This system illustrates the concept of ecological harmony between humans and the environment, in accordance with the principle of Ecocentrism in environmental ethics theory. (Naess, 2017).

AI can be leveraged for mapping **customary forests based on satellite imagery and machine learning**, enabling the early detection of deforestation and the monitoring of the sustainability of customary spatial planning. In line with UNESCO's (2019) view, digital technology-based preservation can strengthen intangible cultural heritage if carried out in a participatory and contextual manner. It also contributes to **SDG 13** ***(Climate Action)*** and **SDG 15** ***(Life on Land).***

3. Social Mutual Cooperation and Community Resilience

Gotong royong is the **main social capital** of the people of Cireundeu, which is reflected in the philosophy ***of "Silih asah, silih asih, silih asuh",*** which means honing each other's knowledge, loving each other, and taking care of each other. This value strengthens social solidarity and community resilience in the face of social and economic challenges.

In the context of theory Putnam1, (2001) Regarding social capital, the practice of cooperation fosters trust and strengthens social networks, serving as the foundation for sustainable community development. Implementation of AI in the form of ***an AI-driven community platform, enabling*** the coordination of social activities and digital documentation of cooperation practices, expanding the reach of local community participation across generations.

4. Cultural Identity and Digital Adaptation in the Society 5.0 Era

The people of Cireundeu possess strong cultural adaptability, as implied in the philosophy of *"Ngindung ka waktu, mibapa ka jaman"***,** which means following the development of time and times without losing their identity. This value reflects (Geertz, 1973) The concept of cultural dynamics posits that culture is adaptive to changes in the social context.

In the era of Society 5.0, cultural identity can be strengthened through **AI-based content generation,** such as creating digital narrative archives, semiotic analysis of folklore, and disseminating indigenous values through interactive media. Thus, technology does not replace culture, but becomes a means of reflection and revitalization of collective identity.

5. Integration of Local Wisdom and Artificial Intelligence Technology

Data analysis using **NVivo 12 Plus** shows three major interrelated themes: (1) preservation of cultural values; (2) technological innovation based on local wisdom; and (3) strengthening community identity in the digital era. The visualization *of the cluster analysis* reveals a close relationship between the nodes of "digital cultural education" and "intergenerational value transfer", highlighting the significant role of AI in the cultural learning process.

An AI-based heritage learning platform enables the community to archive, document, and disseminate local knowledge systematically. This approach is in line with the concept of **human-centred technology** in *Society 5.0* (Schwab, 2016), where technology must be oriented towards humanity and sustainability.

Table 1.
Central Theme of Qualitative Analysis of Indigenous Peoples of Cireundeu

No	Theme	Description of Findings	The Philosophy of the Local Economy	Contribution to the SDGs	Forms of AI Implementation
1	**Cassava-Based Food Independence**	The steadfastness of the people of Cireundeu in making cassava a staple food exemplifies the principles of independence and food security that are deeply rooted in their culture.	*"Teu Boga Sawah Asal Boga Pare, Teu Boga Beas Asal Bisa Nyangu, Teu Nyangu Asal Dahar, Teu Dahar Asal Kuat."*	SDG 2: Zero Hunger; SDG 12: Responsible Consumption and Production	AI-based constellation recipe database and educational chatbot.
2	**Ecological Harmony and Customary Spatial Planning**	The concept of nature conservation through the management of customary forests is divided into three main environmental functions.	*"Leuweung Larangan", "Leuweung Tutupan", "Leuweung Baladahan."*	SDG 13: Climate Action; SDG 15: Life on Land	AI-based satellite imagery for mapping and detecting deforestation.

No	Theme	Description of Findings	The Philosophy of the Local Economy	Contribution to the SDGs	Forms of AI Implementation
3	**Gotong Royong and Social Resilience**	Social solidarity through the practice of cooperation, social gatherings, and joint work.	*"Silih asah, silih asih, silih asuh."*	SDG 11: Sustainable Cities and Communities	AI-driven community platform for social activities.
4	**Digital Identity and Adaptation**	Cultural values are maintained while adapting to digital advancements.	*"Ngindung ka Waktu, Mibapa ka Jaman."*	SDG 4: Quality Education; SDG 9: Industry, Innovation, and Infrastructure	AI for cultural narrative analysis and digital content creation.
5	**Integration of Local Wisdom with AI Technology**	The use of AI for cross-generational documentation and education.	*"Ngindung ka Waktu, Mibapa ka Jaman."*	SDG 17: Partnership for the Goals	An AI heritage learning platform based on digital ethnography.

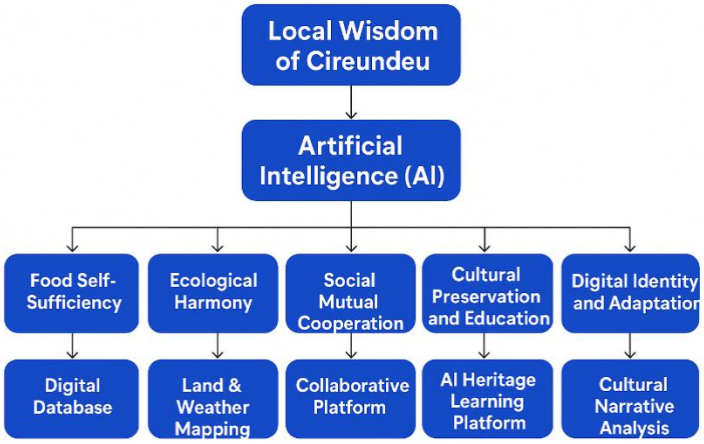

Chart 1.
Conceptual Model of the Relationship between AI and Cireundeu Local Wisdom

This chart illustrates the **reciprocal interaction between local values (independence, ecological harmony, cooperation, cultural identity)** and **the role of AI** as a medium for revitalizing these values. This model confirms that AI is not a tool that replaces culture, but rather a partner that strengthens the inheritance of value across generations, towards a sustainable society in the era of Society 5.0.

6. Discussion Synthesis

The integration of AI in preserving Cireundeu's local wisdom exemplifies the coevolution of culture and technology. Digital technology does not remove traditional values, but fosters new

forms of *cultural resilience*. As stated Geertz, (1973) Culture is a system of meaning that can transform according to its social context.

Community participation is the key to the successful implementation of culture-based AI. Without the involvement of indigenous peoples as holders of authentic values, technology has the potential to cause distortions of meaning (UNESCO, 2019). Therefore, in **participatory design,** it is essential to ensure that technology remains contextual and humanistic, in line with the vision Schwab, (2016) In the Fourth Industrial Revolution, digital transformation must foster human values and social justice.

CONCLUSION AND RECOMMENDATIONS

The results of research on the indigenous people of Cireundeu demonstrate that local wisdom is not only a cultural heritage but also the primary foundation for social, economic, and ecological sustainability in the digital era. Values such as food independence, environmental harmony, cooperation, and cultural adaptation have proven to be able to transform dynamically without losing traditional roots. Philosophies such as *"Teu Boga Sawah Asal Boga Pare"* and *"Ngindung ka waktu, mibapa ka jaman"* demonstrate the community's ability to strike a balance between tradition and innovation. The integration of Artificial Intelligence (AI) technology actually strengthens these values by presenting new media for documentation, learning, and knowledge transfer between generations, thereby supporting the achievement of the Sustainable Development Goals (SDGs).

From both academic and practical perspectives, this study demonstrates that the application of AI based on local wisdom values contributes to strengthening the cultural resilience of indigenous peoples amid globalization and technological modernization. AI does not serve as a substitute for human or cultural roles, but rather as *an enabler* that expands the reach of value preservation. The resulting conceptual model illustrates the reciprocal relationship between local cultural values and digital technologies that mutually reinforce each other. Thus, the integration of local wisdom and AI becomes an ideal model for a sustainable society in the era of Society 5.0, where technological advances align with human values, spirituality, and environmental sustainability.

This research recommends that local governments, educational institutions, and cultural organizations develop AI-based cultural heritage digitization programs that place indigenous peoples as the leading actors. The creation of ***a publicly accessible AI heritage learning platform*** will strengthen intergenerational knowledge transfer and increase awareness of the importance of local food security. In the academic realm, it is necessary to develop further research on AI ethnography, specifically the application of artificial intelligence in enriching ethnographic methods for cultural documentation. In addition, researchers and policymakers need to create a collaborative space that synergizes traditional knowledge and digital innovation, without compromising local cultural values.

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