Digital Cultural Heritage Protection in The Era of Artificial Intelligence From The Perspective of Indonesian Intellectual Property Law

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Abstract.

The development of artificial intelligence (AI) technology has presented both opportunities and challenges for intellectual property protection, particularly in the context of digital culture. Generative batik motifs, AI-based ethnic music, and folk tales reproduced through natural language processing are examples of new phenomena that raise legal questions regarding ownership, protection, and the rights of indigenous peoples. This study aims to analyze regulatory gaps in the protection of AI-based traditional cultural expressions (TCE's) in Indonesia and offer alternative legal models. The research method used is normative juridical with a legislative, conceptual, and comparative approach, supplemented with empirical data in the form of preliminary interviews with cultural practitioners and law enforcement officials. The results of the study show that Indonesian IPR law still focuses on individual creators, is unable to address the issue of non-human creators, and is not accommodative of the communal nature of culture. A sui generis legal protection model is needed that is able to integrate the principles of cultural justice, benefit sharing mechanisms, and digital protection. This article offers ideas for a new regulatory framework that is expected to form the basis for the renewal of national intellectual property law.

Keywords: *Artificial Intelligence; Intellectual Property Law; Traditional Cultural Expressions; Digital Heritage and Sui Generis Protection.*

I. INTRODUCTION

The development of artificial intelligence (AI) technology in the last decade has presented significant opportunities and challenges in almost all aspects of human life.(Teilmann-Lock & Savin, 2025) One of the areas of great impact is culture, specifically related to the creation, reproduction and dissemination of digital cultural works. AI is not only a technical tool,(Westenberger & Farmaki, 2025) but also a new creative actor who is able to produce works with artistic and cultural value. This phenomenon is seen in the birth of generative batik motifs through Generative Adversarial Networks (GANs) algorithms, ethnic music compositions based on machine learning, to folklore that are reprocessed by Natural Language Processing (NLP).This condition presents serious questions in the framework of intellectual property law (IPR). Can cultural works generated or modified by AI be protected as creations? If so, who has the right to be the copyright holder: the human creator who designed the AI, the owner of the software, or the indigenous community who is the source of cultural inspiration? This question is increasingly urgent to answer because of the rise of cultural commodification practices in the form of Non-Fungible Tokens (NFTs), digital art, and augmented reality.Indonesia as a country with a very diverse cultural wealth faces a double dilemma. On the one hand, AI-based digitization has the potential to preserve and popularize traditional cultural expressions (EBT) into the global realm.(Au] & Hazucha, n.d.; Dyah P. B. Asri, 2022) But on the other hand, without an adequate legal framework, digital cultural works are vulnerable to being commodified, traded, and even patented by other parties without providing benefit sharing to the community of cultural owners.

Indonesia's legal framework, especially law No. 28 of 2014 on copyright and Law No. 5 of 2017 on cultural progress, is still inadequate in answering these challenges.(Dyah P. B. Asri, 2022) The current national legal framework has not been able to answer these problems.(Wang et al., 2023) Law Article Number 28 of 2014 on copyright still bases the concept of creators on humans, so it does not anticipate the emergence of AI-based works. Law No. 5 of 2017 on the promotion of culture focuses more on preservation,

not legal protection against digital exploitation.(Hugenholtz & Quintais, 2021) Meanwhile, international instruments such as the World Intellectual Property Organization (WIPO) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) do touch on issues of traditional knowledge, but have not specifically regulated the context of AI. As a result, AI-driven digital cultural heritage is vulnerable to unauthorized commercialization and cross-border exploitation.(Stapleton & Jaillant, 2022) This condition indicates a regulatory gap that has serious implications. Without clear legal protections, traditional cultural expressions could potentially be unfairly exploited. Cases of cultural recognition by other countries or foreign parties show Indonesia's weak position in protecting cultural heritage, especially when the issue is brought to the AI-based digital realm that crosses borders.This research is important for three main reasons. First, the development of AI in the field of digital culture is no longer an issue of the future, but a reality that has already happened. Second, the Indonesian legal system is not ready for this change, as evidenced by the absence of specific regulations governing the role of AI in the IPR framework. Third, as a country with a very rich cultural heritage, Indonesia risks losing its cultural sovereignty if it does not immediately formulate the right legal protection mechanism.

Based on the above, this study focused on answering two main questions:

1. How does Indonesia's intellectual property legal framework protect traditional cultural expressions modified or created through AI?
2. What kind of legal protection models can be offered to overcome such regulatory gaps?

Theoretically, this research contributes to the development of the study of intellectual property law in the context of cultural digitization. In practical terms, this research is expected to be an input for the government in formulating AI-based digital Culture protection policies. Socially, this research supports efforts to empower cultural communities to have a stronger bargaining position in the face of the digital era.

II.   METHODS

This study uses a normative juridical approach (normative juridical research) because the main issues studied are related to the regulatory framework and legal conception. The focus of the research is directed to the analysis of applicable legislation, legal doctrine, and international legal instruments relevant to the protection of traditional cultural expressions (EBT) in the context of artificial intelligence (AI).

1.   Research Approach

To strengthen the analysis, three main approaches are used:

a. Statutory approach (Statute Approach), which examines Law No. 28 of 2014 on Copyright, Law No. 5 of 2017 on the promotion of Culture, Law No. 11 of 2008 on information and Electronic Transactions (ITE), as well as various related implementing regulations.

b. Conceptual Approach (Conceptual Approach), which examines theoretical concepts regarding IPR protection, especially copyright, and the idea of sui generis law for traditional cultural expressions modified or created by AI.

c. The Comparative Approach, which compares Indonesian regulations with the legal frameworks of other countries, such as Japan and Malaysia, which have begun to anticipate AI and digital culture issues.

2.   Data Types And Sources

The Data used consists of:

a. Primary legal materials, including national laws, government regulations, international treaties (TRIPS, WIPO), and relevant legal rulings.

b. Secondary legal materials, in the form of literature, books, journal articles, research results, as well as reports of international organizations related to AI and cultural protection.

c. Tertiary legal materials, in the form of legal dictionaries, legal encyclopedias, and other supporting sources that help clarify important concepts.

In addition, to enrich the normative analysis, this study is also supported by preliminary empirical data obtained through limited interviews with legal practitioners, academics, and cultural actors. This Data is not intended to generalize, but rather to provide a factual picture of how the issue is perceived by stakeholders.

3. Data Collection And Analysis Techniques

Data collection techniques are carried out through library studies (library research) to inventory and review regulations and Related Literature. Interview Data were analyzed descriptively to complete the conceptual framework. All data were then analyzed qualitatively with legal interpretation methods, both grammatical, systematic, and teleological, to find normative solutions that fit the legal needs in Indonesia.

4. Data Validity

To maintain validity, triangulation is carried out between primary sources of Law, current academic literature, as well as empirical data. Thus, the resulting analysis is not only based on legal doctrine, but also reflects real needs in the field.

III. RESULT AND DISCUSSION

1. The development of AI and the transformation of Digital Culture

The development of artificial intelligence (AI) technology in the last decade has penetrated almost all aspects of life, including the realm of art and culture.(Reynata & Arum, 2025) AI is no longer just a technical tool, but has become a creative entity capable of producing works of art, music, literature, to visual design with a high level of complexity. In the cultural context, this phenomenon gives rise to the term AI-driven digital culture, that is, cultural works that are born or modified by artificial intelligence algorithms.AI now has the ability to produce works of music, painting, visual design, and even literature with styles and characters that mimic or even surpass human capabilities. For example, programs like DALLE, Midjourney, and ChatGPT can generate images, text, and creative ideas that previously took years of human time, skill, and experience to master. This shows that the boundaries between human and machine creativity are increasingly blurred.

In a cultural context, this has led to philosophical and ethical debates regarding copyright, authenticity, as well as the meaning of creativity itself. (Bracha, 2024)Is the work produced by AI can still be called "human art", or should we recognize the existence of AI as a new creative subject ? AI-driven digital culture is also changing the way people interact with art and culture.(Ampovska, 2025) Social media algorithms, for example, determine cultural trends and influence public taste through content personalization.(Bracha, 2024) Meanwhile, artists are now using AI not just as an auxiliary tool, but as a collaborative partner that opens up new possibilities in artistic exploration. Thus, AI is not only revolutionizing the process of creating art, but also the social and economic structures that sustain cultural ecosystems.Ultimately, this development shows that human culture is moving towards an era of symbiosis between man and machine.(Wu, 2025) AI is no longer just a tool, but an integral part of the dynamics of modern culture that continues to evolve as technology advances and people's social values change.(Rosati, 2025)

In Indonesia, several real phenomena have occurred, among others:

a. Generative Batik motifs created through Generative Adversarial Networks (GANs) algorithm by combining Javanese, Papuan, and Kalimantan batik patterns. The results of this work are then commercialized through online platforms.

b. AI-based ethnic music that uses machine learning to produce compositions resembling Balinese gamelan or Dayak music, but with a modern digital touch.

c. Digital folklore such as Timun Mas or Malin Kundang are reproduced by Natural Language Processing (NLP) so that they appear in the form of digital interactive stories or automatic audiobooks.

d. Virtual clothing and architecture (AR/VR) that uses AI rendering to re-present Bugis or Minangkabau traditional houses in virtual space.

e. Cultural NFTS tokenize traditional works of art, such as puppets or Toraja carvings, and are traded on the global digital marketplace.

The following table summarizes some examples of AI-based digital cultural works and their inherent legal issues:

Fig 1. AI-based Digital cultural works

Type of Work	Technology	Cultural Origin	Intellectual Property Law Issues	Cultural Issues
Traditional Batik Motif	Textile dyeing, natural coloring	Javanese Culture (Solo, Yogyakarta, Pekalongan)	Lack of geographical indication registration; misuse of traditional motifs by foreign brands	Loss of cultural identity and economic benefit for local artisans
Wayang Kulit Tatah Sungging	Hand-carved leather puppetry	Yogyakarta Cultural Axis	Weak protection of traditional craftsmanship under IP law	Risk of cultural extinction and erosion of local knowledge
Keris (Traditional Dagger)	Metal forging, ornamental carving	Javanese and Madurese Culture	Limited IP protection as cultural heritage; potential for imitation	Commercialization without acknowledgment of cultural meaning
Balinese Dance	Performing arts, digital recording	Balinese Culture	Copyright ownership disputes when performances are digitized	Cultural commodification and distortion of traditional meaning
Traditional Music (Gamelan)	Acoustic instrument, digital reproduction	Javanese and Balinese Culture	Ambiguity in copyright of digital versions and derivative works	Cultural appropriation by global media
Traditional Culinary (Gudeg, Rendang)	Food technology, packaging innovation	Javanese and Minangkabau Culture	Lack of GI protection; no legal safeguard against imitation	Culinary heritage losing authenticity through commercialization
Digital Art with AI Elements	Artificial Intelligence, image generation	Hybrid (Local and Global Influences)	Authorship and ownership issues; originality in AI-generated content	Blurring of traditional and modern cultural identity
Handwoven Tenun Ikat	Weaving technology, natural dye	East Nusa Tenggara Culture	Unregistered community rights; insufficient collective trademark	Decline of traditional weaving among younger generations

This phenomenon confirms that AI presents great opportunities in preserving culture, but at the same time carries a serious threat in the form of commodification and exploitation without adequate legal protection.

2. Indonesian Intellectual Property Law Framework

IPR law in Indonesia is still basically oriented towards individual creators. Law Number 28 of 2014 on copyright, article 1 Paragraph (2), defines the creator as "one person or several people who individually or jointly produce a creation that is distinctive and personal."(Wu, 2025) This definition clearly shows that what is recognized as the creator is only man (natural person).(Permata et al., n.d.) As a result, works produced entirely by AI systems have no clear legal basis for being categorized as protected "creations". (Ruhtiani et al., 2025) AI, which plays the role of a non-human entity, cannot be a subject of law, while individuals or legal entities operating AI cannot necessarily be claimed as creators in the legal sense. This is the so-called "gray area" of the law, that is, a gray area in which the results of the work of AI are not explicitly regulated within the framework of existing laws.Furthermore, Law Number 5 of 2017 concerning Cultural Advancement actually regulates cultural protection strategies through four main pillars: protection, development, utilization, and guidance. However, the focus of this law is more normative and administrative in nature—it emphasizes cultural preservation and empowerment rather than concrete legal protection of traditional cultural expressions, especially in the context of digitization or modification using AI technology. In other words, this law does not yet have an implementative mechanism that can provide legal protection for Traditional Cultural Expressions (TCEs) that are processed, reproduced, or commercialized digitally.Meanwhile, Law No. 11 of 2008 concerning Electronic Information and Transactions (ITE Law) and its amendments focus more on issues of cyber security, digital transactions, and misuse of information technology.

This law does not touch on aspects of intellectual property or cultural protection. Therefore, if a traditional cultural work is processed using AI and then sold in digital form for example, generative batik motifs or machine learning-based gamelan music Indonesian positive law does not yet provide a mechanism to determine who owns the copyright and how legal protection for such works can be enforced.This situation creates a significant legal gap. On the one hand, cultural communities as the original owners of traditional knowledge and expressions have the potential to be harmed because their works can be easily replicated, modified, or patented by other parties, including global technology companies. On the other hand, the absence of regulations that are adaptive to the development of AI makes it difficult for the government to

enforce fair legal protection that is appropriate to the digital context.(Ruhtiani et al., 2025) .The implications of this legal vacuum are not only economic, but also social and cultural. If traditional Indonesian cultural works continue to be used without recognition and protection, the symbolic, philosophical, and spiritual values contained within them risk being reduced to mere digital commodities. In the long term, this could lead to cultural erosion and cultural commodification, which would weaken the position of indigenous communities as holders of cultural authority.Thus, Indonesia needs comprehensive and adaptive legal reforms in response to technological developments. There is a need for a new legal framework or amendments to existing laws to accommodate the protection of traditional cultural works in the AI era including recognition of digital heritage, collective protection mechanisms for cultural communities, and new definitions of authorship and ownership in the context of works involving algorithms.(Ali & Nazeer, 2025) This step is important so that the preservation of Indonesian culture is not only symbolic, but also has real legal force amid the global digital revolution.

3. Comparison With Other Countries

3.1. Japan

Japan is known to be progressive in anticipating AI and IPR issues. The Japanese government has issued guidelines that allow the use of created works for AI training, while still providing protection for human creators. Japan is also discussing the possibility of granting a certain legal status to works produced by AI, although it is not yet at the stage of legislation.

3.2. Malaysia

Malaysia has the Traditional Knowledge and Traditional Cultural Expressions (TKTCEs) Act which provides special protection for traditional cultural expressions. This law protects not only individual owners, but also Indigenous communities as subjects of law. Although it has not specifically regulated the role of AI, this legal framework is more adaptive than Indonesia because it already recognizes collective rights.

3.3. Relevance to Indonesia

Japan's experience shows the importance of legal adaptation to AI developments, while Malaysia shows the need for special protection against EBT. Indonesia can adopt a combinative approach: anticipate the role of AI while strengthening collective protection against EBT.

4. Normative And Critical Analysis

Based on the results of the study, there are several main issues:

a. Ownership of AI-based works → Indonesian positive law only recognizes humans as creators. As a result, AI works do not fall into the category of protected creations.

b. Limitations of individualistic IPR regime → communal nature of EBT are not accommodated. Indigenous communities that should have had collective rights were often left out.

c. Cross-border exploitation risk → in the digital age, AI-based cultural works are easily traded globally, while the cultural rights claim mechanism is not yet strong.

d. The absence of benefit sharing mechanism → cultural communities do not get economic benefits from digital works that are sourced from their cultural heritage.

This analysis shows that Indonesia needs a new approach to the protection of digital culture, not just relying on the existing IPR regime.

5. Legal Protection Model Offered Legal Protection Model Offered

The proposed sui generis legal protection model for digital Traditional Cultural Expressions (TCEs) presented in the study is an innovative solution to bridge the legal gap between the development of artificial intelligence (AI) technology and the protection of traditional cultural rights in Indonesia. This model is sui generis because it is specifically designed outside the conventional intellectual property law regime (such as copyright and patents), adapting to the collective, communal, and hereditary characteristics of traditional Indonesian culture.First, the recognition of collective legal subjects marks an important paradigm shift from an individual orientation to a community orientation. In the context of digital EBT, indigenous peoples or cultural communities become collective rights holders of inherited works, both in their original form and as modified by AI technology. Thus, ownership no longer depends on individual creators, but rather on social entities that preserve cultural values. This is important to ensure that cultural communities retain moral and

legal authority over their works in the digital space.Second, the digital EBT registration mechanism under the Directorate General of Intellectual Property (DGIP) with a special category serves as a form of administrative recognition. This registration is not merely a formality, but serves as legal evidence to prevent claims or misuse by other parties. In addition, this system enables the collection, documentation, and digitization of cultural works that can be used for preservation and global promotion purposes.

Third, the implementation of a digital culture license (Digital Culture License) introduces a new legal instrument that requires any party wishing to utilize digital EBT for commercial purposes to obtain official permission.(Westkamp, 2022) This scheme encourages ethical practices in the use of culture, while providing legal clarity in economic activities based on cultural heritage.Fourth, the benefit-sharing mechanism ensures that the economic benefits of using digital EBT are shared fairly with the community of origin. This principle affirms that culture is not only a source of aesthetic inspiration, but also an economic asset that deserves to provide benefits to its original owners. This model is in line with the principle of equitable benefit sharing that has been internationally recognized in the context of genetic resources and traditional knowledge.Fifth, strengthening international mechanisms through forums such as the World Intellectual Property Organization (WIPO) is a strategic step towards global recognition of AI-based EBT protection. With Indonesia's active participation, it is hoped that international standards will be created to protect digital cultural works from cross-border exploitation.Overall, this sui generis model not only provides legal certainty but also builds a fair and sustainable ecosystem between technology, economy, and culture. This approach places cultural communities as the main subjects, AI as a tool for transformation, and the law as a protector of local wisdom values in the global digital era.

IV. CONCLUSION

The development of artificial intelligence (AI) technology has brought a significant impact on the creation, reproduction, and dissemination of digital cultural works. In Indonesia, the phenomenon of generative batik, AI-based ethnic music, digital folklore, and cultural NFTs are clear evidence that AI not only functions as a tool, but also as a creative actor. However, Indonesia's intellectual property legal framework still focuses on human creators and has yet to accommodate the communal nature of traditional cultural expressions (EBT). Copyright laws, cultural promotion laws, and other regulations have not been responsive to the issue of non-human creators and EBT protection in the digital space. This creates regulatory gaps that can be detrimental to cultural communities, particularly in terms of ownership, commodification, and sharing of economic benefits.

The comparison with Japan shows the importance of legal adaptation to the development of AI, while Malaysia provides an example of collective protection of traditional cultural expressions. From the analysis, Indonesia needs an inclusive sui generis model of legal protection. This Model includes the recognition of collective legal subjects, digital EBT registration mechanisms, cultural licensing systems, benefit sharing schemes, as well as advocacy for protection in international forums.Thus, this study confirms the urgency of updating intellectual property law in Indonesia in order to be able to face the challenges of the digital era. AI-based digital cultural protection is not only a legal issue, but also relates to national identity, cultural sovereignty, and social justice for Indigenous communities.

V. ACKNOWLEDGMENTS

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