



Research Article

Intellectual Property Rights Analysis in the Context of Artificial Intelligence Development in the Indonesian Legal Context

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Abstract

Background: *The rapid development of artificial intelligence (AI) in Indonesia presents new challenges and opportunities in the field of intellectual property rights (IPR). AI's ability to autonomously create creative works, inventions, and data-driven insights raises critical questions regarding authorship, ownership, and the scope of protection within Indonesia's existing IPR legal framework.*

Methodology: *The legal research methodology in this context will involve comparative legal analysis to compare the intellectual property rights (IPR) framework in Indonesia with legal frameworks in other countries that have faced similar challenges related to artificial intelligence (AI). The research will also involve legal theory analysis and case studies to identify weaknesses and strengths within the existing legal framework and their implications for practice. Interpretative legal methods will also be employed to*

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understand how the adoption of AI in IPR can be interpreted and applied within the Indonesian legal context.

Objectives: *This article aims to provide a comprehensive overview of the challenges and opportunities presented by AI in the field of intellectual property in Indonesia, offering insights into potential legal reforms and policy directions.*

Findings: *The result shows that there is necessity for adapting Indonesian intellectual property laws to address AI-generated creations, emphasizing AI's potential to improve enforcement. It underscores the importance of considering ethical and socioeconomic impacts and suggests a comprehensive understanding for effective legal reforms in Indonesia.*

Originality/Novelty: *This article focuses on the Indonesian context, highlighting the specific challenges and opportunities that arise at the intersection of artificial intelligence and intellectual property rights within the country's legal framework. By emphasizing the need for legal adaptation and enforcement enhancement tailored to Indonesia's unique circumstances, it provides valuable insights for policymakers and stakeholders addressing these complex issues in the Indonesian context.*



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Introduction

In the continuously evolving digital era, advancements in artificial intelligence (AI) technology have garnered considerable attention across various sectors. Alongside its capacity to produce increasingly complex and innovative works, AI has raised profound questions regarding the role and protection of intellectual property rights (IPR). Serving as a cornerstone for innovation and creation, IPR plays a crucial role in driving economic growth and ensuring the protection of human creativity.¹

Within this context, this article aims to investigate the intricate relationship between intellectual property law and the development of artificial intelligence technology. By integrating legal, technological, and ethical perspectives, this article will explore the

¹ Ashraful Tauhid et al., “A Survey on Security Analysis of Machine Learning-Oriented Hardware and Software Intellectual Property,” *High-Confidence Computing* (Shandong University, June 1, 2023), <https://doi.org/10.1016/j.hcc.2023.100114>.



challenges and opportunities arising from the integration of AI within the framework of IPR.²

With a global focus, this article will analyze different legal approaches across various jurisdictions, identifying trends and best practices in addressing issues related to AI and IPR. Additionally, this article will consider the social, economic, and cultural impacts of AI implementation within the realm of IPR, while highlighting the ethical implications essential for policy formulation.³

Furthermore, this article will explore the paradigm shift resulting from the development of artificial intelligence technology, particularly concerning copyright, patents, and trade secrets. With the increasing adoption of AI in creative and innovative processes, the protection of intellectual property rights becomes increasingly complex. Consequently, this article will evaluate whether existing legal frameworks are sufficiently flexible to accommodate AI dynamics or if deeper changes and adjustments are necessary to ensure adequate protection of creators' and innovators' rights.⁴

Finally, this article highlights several initiatives and measures undertaken by governments, regulatory bodies, and industries to address the challenges presented by the integration of AI within the realm of IPR. By providing a comprehensive understanding of the interaction between AI and IPR, this article is expected to contribute significantly to the development of regulations and policies in the future, aiding in the establishment of a fair and sustainable framework for effectively managing this technological transformation.

Research Method

The legal research methodology in this context will involve comparative legal analysis to compare the intellectual property rights (IPR) framework in Indonesia with legal frameworks in other countries that have faced similar challenges related to artificial intelligence (AI). The research will also involve legal theory analysis and case studies to identify weaknesses and strengths within the existing legal framework and their implications for practice. Interpretative legal methods will also be employed to understand how the adoption of AI in IPR can be interpreted and applied within the Indonesian legal context.

² Weisheng Lu and Liupengfei Wu, "A Blockchain-Based Deployment Framework for Protecting Building Design Intellectual Property Rights in Collaborative Digital Environments," *Computers in Industry* 159–160 (August 1, 2024), <https://doi.org/10.1016/j.compind.2024.104098>.

³ Jan Krauss, Lore Breitenbach-Koller, and David Kutenkeuler, "Intellectual Property Rights and Their Role in the Start-up Bioeconomy – a Success Story?," *EFB Bioeconomy Journal* 1 (November 2021): 100002, <https://doi.org/10.1016/j.bioeco.2021.100002>.

⁴ Rowena Rodrigues, "Legal and Human Rights Issues of AI: Gaps, Challenges and Vulnerabilities," *Journal of Responsible Technology* 4 (December 2020): 100005, <https://doi.org/10.1016/j.jrt.2020.100005>.



The Development of Artificial Intelligence and Intellectual Property Law in Indonesia

The development of artificial intelligence (AI) in Indonesia has brought significant transformations across various sectors, including healthcare, education, finance, and transportation. The Indonesian government actively supports the adoption of this technology through various initiatives and policies, recognizing its potential to drive economic growth and improve the quality of life for its citizens. However, along with these technological advancements, numerous challenges have emerged in the field of intellectual property (IP) law that need to be addressed promptly.⁵

The development of Intellectual Property (IP) and Artificial Intelligence (AI) regulation in Indonesia remains stuck due to several challenges. First, there is no comprehensive legal framework that addresses the unique issues posed by AI, such as questions of authorship, ownership, and infringement related to AI-generated works. This is compounded by a lack of technical expertise within the regulatory bodies, making it difficult to draft informed regulations. Indonesia's legislative process is notoriously slow and bureaucratic, with other pressing social and economic issues taking priority over AI and IP law reform. A significant challenge is balancing innovation with regulation; while strict rules could stifle AI innovation, a lack of regulation could create legal uncertainties for businesses. The country also faces the difficulty of aligning its laws with evolving international standards, adding complexity to an already slow process. Public awareness about AI and its implications for IP remains low, both among policymakers and the broader public, which hinders the push for urgent reforms. Additionally, certain industries may resist new regulations, fearing that these could hamper growth, leading to further delays. To move forward, Indonesia will need to build technical expertise among its regulators, engage in international collaboration, and foster partnerships with industry to ensure that the regulatory environment promotes both innovation and legal clarity.

Furthermore, one of the primary challenges is determining ownership and copyright for works generated by AI. Traditional copyright law in Indonesia recognizes only humans as copyright holders, creating confusion on how to regulate copyright for works produced by non-human entities like AI. This issue becomes increasingly complex when considering that AI can generate art, music, literature, and even technical inventions without direct human intervention.⁶

Furthermore, the use of AI to create new technical inventions raises questions about who has the right to apply for patents. Current patent law does not clearly address inventions

⁵ Kwaku Adu-Amankwa et al., "Intellectual Property Management Challenges of Additive Manufacturing in Replacement Part Supply Chains," in *IFAC-PapersOnLine*, vol. 55 (Elsevier B.V., 2022), 1527-32, <https://doi.org/10.1016/j.ifacol.2022.09.607>.

⁶ Yu li Liu et al., "Privacy in AI and the IoT: The Privacy Concerns of Smart Speaker Users and the Personal Information Protection Law in China," *Telecommunications Policy* 46, no. 7 (August 1, 2022), <https://doi.org/10.1016/j.telpol.2022.102334>.



generated entirely or partially by AI. This creates legal uncertainty for innovators and companies utilizing AI in their research and development. Protection for designs and trademarks also needs to be adapted to cover works generated by AI, ensuring that these rights are fairly and effectively protected.

The advent of artificial intelligence (AI) in creative and inventive processes presents significant challenges to the existing intellectual property (IP) law framework in Indonesia. These challenges arise from the current legal requirements for human authorship, issues related to legal accountability, and the complexities of defining originality and inventiveness in AI-generated works.⁷

One of the primary challenges is the requirement for human authorship in Indonesian IP law. Current statutes, such as the Copyright Law No. 28 of 2014 and the Patent Law No. 13 of 2016, explicitly or implicitly necessitate that the creator or inventor be a human or a legally recognized entity. This poses a problem when dealing with AI-generated works, especially those created autonomously without direct human input. The absence of clear legal recognition for AI as an author or inventor creates ambiguity about who owns the IP rights in such creations. This gap in the law could potentially discourage the utilization of AI in innovative sectors, as stakeholders may face uncertainties regarding the protection and commercialization of AI-generated IP.⁸

Legal accountability is another significant challenge. The current IP law framework is designed to hold human creators and inventors accountable for their works. This includes the ability to enforce rights, enter into legal agreements, and face litigation if necessary. AI, lacking legal personality, cannot fulfill these roles. If AI were to be recognized as an author or inventor, it would raise difficult questions about who would be responsible for any infringements or legal disputes involving AI-generated works. This lack of a clear accountable party complicates the enforcement of IP rights and may lead to legal uncertainty and increased litigation.⁹

Defining originality and inventiveness in the context of AI-generated works also presents a substantial challenge. IP law traditionally relies on human attributes such as creativity, intention, and skill to determine the originality of a work or the inventiveness of an invention.¹⁰ AI systems, however, operate based on algorithms and data inputs, which may

⁷ Jawahitha Sarabdeen and Mohamed Mazahir Mohamed Ishak, "Intellectual Property Law Protection for Energy-Efficient Innovation in Saudi Arabia," *Heliyon* 10, no. 9 (May 15, 2024), <https://doi.org/10.1016/j.heliyon.2024.e29980>.

⁸ Mingli Xia and Guangfeng Zhu, "The Importance of Intellectual Property: Analyzing the Impact of Resource Efficiency Improvements in the Mineral Sector," *Resources Policy* 91 (April 1, 2024), <https://doi.org/10.1016/j.resourpol.2024.104877>.

⁹ Sara Migliorini, "China's Interim Measures on Generative AI: Origin, Content and Significance," *Computer Law and Security Review* 53 (July 1, 2024), <https://doi.org/10.1016/j.clsr.2024.105985>.

¹⁰ Authorship is a person or several people who, either individually or jointly, produce a creation that is original and personal. Inventorship is a person or several people who jointly carry out an idea that is poured into an activity resulting in an invention. See Law Number 28 of 2014 on Copyright and Law Number 13 of 2016 on Patent



blur the lines of what constitutes an original or inventive work. The criteria used to assess human-created IP may not be directly applicable to AI-generated outputs, necessitating new standards and guidelines. This raises fundamental questions about the nature of creativity and innovation and how they should be measured and protected under the law.¹¹

Moreover, the economic implications of AI-generated IP are profound. If AI were to be recognized as a creator or inventor, it could shift the distribution of IP rights and the associated economic benefits. The current system ensures that humans, whether individuals or corporations, reap the rewards of their creative and innovative efforts. Recognizing AI as an IP owner could disrupt this balance, potentially leading to debates about the distribution of economic gains from AI-generated works and inventions.¹²

Therefore, the integration of AI into creative and inventive processes challenges the existing IP law framework in Indonesia in several ways. These include the requirement for human authorship, issues of legal accountability, and the complexities of defining originality and inventiveness in AI-generated works. Addressing these challenges will likely require legislative reforms and the development of new legal standards to ensure that the IP law continues to incentivize innovation while providing clear and fair protections in the age of AI.

Although Indonesia has an established legal framework governing intellectual property rights, such as the Copyright Act, Patent Act, and Trademark Act, these regulations do not fully accommodate the advancements in AI. Therefore, comprehensive legal reforms are needed to update the definitions and criteria within IP law to reflect the AI era. These reforms include redefining the terms author, creator, and inventor, as well as the criteria for originality in works produced by AI.¹³

International cooperation is also crucial in addressing these challenges. Indonesia can learn from best practices in other countries that have previously dealt with IP and AI issues. Collaboration with international organizations such as the World Intellectual Property Organization (WIPO) can assist Indonesia in formulating effective policies. International cooperation will facilitate the recognition and protection of intellectual property rights across different jurisdictions, fostering a global environment that supports innovation.

In addition to legal reforms and international cooperation, raising awareness and educating stakeholders about the legal implications of AI is essential. Government officials, entrepreneurs, academics, and the general public need to understand the changes and

¹¹ Esra Demir, "The Protection of Human Biodata: Is There Any Role for Data Ownership?," 2023, <https://doi.org/10.1016/j.jbi.2017.0>.

¹² Mark Fenwick and Paulius Jurcys, "Originality and the Future of Copyright in an Age of Generative AI," *Computer Law and Security Review* 51 (November 1, 2023), <https://doi.org/10.1016/j.clsr.2023.105892>.

¹³ Yong Wan and Hongxuyang Lu, "Copyright Protection for AI-Generated Outputs: The Experience from China," *Computer Law and Security Review* 42 (September 1, 2021), <https://doi.org/10.1016/j.clsr.2021.105581>.



challenges that AI brings to the field of IP law. Education and awareness will help create an environment that supports innovation while protecting intellectual property rights.¹⁴

Through continuous monitoring and evaluation, as well as increased awareness and education, Indonesia can ensure that its IP system remains relevant and effective in the evolving digital era. Looking towards the future, Indonesia must be prepared to adjust its laws and policies to accommodate technological advancements, support innovation, and protect intellectual property rights fairly and effectively.

Generative AI as Intellectual Property Inventor

The rapid advancement of generative AI technologies has led to significant innovations across various fields, raising complex questions about intellectual property (IP) rights. One of the primary debates' centers around the ownership of IP for inventions and creations produced by AI. Traditional IP frameworks, which typically recognize human inventors and creators, are being challenged by the capabilities of AI to generate novel works independently. This exploration delves into the key issues, various perspectives, and potential solutions regarding the ownership of IP rights in the context of generative AI.¹⁵

Currently, there are few legal precedents specifically addressing AI-generated inventions. Most IP laws are designed with human inventors in mind, leading to a legal gray area when it comes to AI-generated works. For example, patent laws typically require a natural person to be named as the inventor, excluding AI from being recognized as an inventor. Different jurisdictions are exploring ways to address this issue. In the United States, the United States Patent and Trademark Office (USPTO) has maintained that only natural persons can be recognized as inventors. Similarly, the European Patent Office (EPO) and the United Kingdom Intellectual Property Office (UKIPO) have rejected patent applications listing AI as the inventor. In contrast, some countries are beginning to consider more flexible approaches. For instance, South Africa granted a patent where AI was acknowledged as the inventor, although this remains an outlier globally.¹⁶

Ownership typically resides with the entity or individual who owns the AI system or the one who inputs the initial data and parameters into the AI. This approach is based on the principle that the AI operates as a tool under human or corporate control. The debate extends to accountability and liability issues, where the legal system must determine who is responsible for the AI's actions and creations. This accountability often defaults to the

¹⁴ Gönenç Gürkaynak et al., "Intellectual Property Law and Practice in the Blockchain Realm," *Computer Law and Security Review* 34, no. 4 (August 1, 2018): 847–62, <https://doi.org/10.1016/j.clsr.2018.05.027>.

¹⁵ Nina Telg, Boris Lokshin, and Wilko Letterie, "How Formal and Informal Intellectual Property Protection Matters for Firms' Decision to Engage in Coopetition: The Role of Environmental Dynamism and Competition Intensity," *Technovation* 124 (June 1, 2023), <https://doi.org/10.1016/j.technovation.2023.102751>.

¹⁶ Sébastien Ragot, "Measuring the Originality of Intellectual Property Assets Based on Estimated Inter-Asset Distances," *World Patent Information* 69 (June 1, 2022), <https://doi.org/10.1016/j.wpi.2022.102106>.



owner or operator of the AI system. Redefining inventorship to include AI as a potential co-inventor or sole inventor is one approach to resolving these issues, though it would require significant changes to existing IP laws and international treaties, acknowledging AI as an autonomous entity capable of innovation. Alternatively, inventorship could remain human-centric, with a focus on the contributions of individuals who design, program, and operate the AI systems. This approach maintains the current legal framework but may limit the recognition of AI's autonomous contributions.¹⁷

Several models have been proposed for determining ownership of AI-generated IP. One model assigns ownership to the developer or operator of the AI system, recognizing their role in creating and maintaining the AI. Another model suggests a collaborative approach, where ownership is shared between the AI's developer and the entity that provided the data or initial inputs. These models must balance the incentives for human creativity and innovation against the contributions made by AI systems. Ethical considerations include the potential impact on human creators and inventors. If AI can be granted IP rights, it could alter the landscape of innovation, possibly reducing the incentive for human inventors. Practically, enforcing IP rights for AI-generated works presents challenges. The legal system would need mechanisms to assess AI's contributions and resolve disputes over inventorship and ownership.¹⁸

The issue of who owns the rights to inventions generated by AI is complex and multifaceted, requiring careful consideration of legal, ethical, and practical factors. While current legal frameworks primarily recognize human inventors, there is growing recognition that these frameworks may need to evolve to accommodate the capabilities of AI. International collaboration and comprehensive legal reforms are essential to address these challenges effectively. As the technology continues to advance, ongoing dialogue among policymakers, legal experts, and technologists will be crucial in developing fair and effective IP laws that promote innovation while protecting the rights of all contributors, both human and artificial.¹⁹

In the context of copyright law in Indonesia, the development of artificial intelligence (AI) raises several critical analyses regarding the determination of ownership rights over works generated by AI. Indonesian Copyright Law (ICL) currently recognizes copyright as

¹⁷ Pratheeba Vimalnath et al., "Responsible Intellectual Property Strategy for Sustainability Transition - An Exploratory Study," *World Patent Information* 73 (June 1, 2023), <https://doi.org/10.1016/j.wpi.2023.102195>.

¹⁸ Bernd Carsten Stahl et al., "Exploring Ethics and Human Rights in Artificial Intelligence - A Delphi Study," *Technological Forecasting and Social Change* 191 (June 1, 2023), <https://doi.org/10.1016/j.techfore.2023.122502>.

¹⁹ Erik Hermann and Stefano Puntoni, "Artificial Intelligence and Consumer Behavior: From Predictive to Generative AI," *Journal of Business Research* 180 (July 1, 2024), <https://doi.org/10.1016/j.jbusres.2024.114720>.



inherent to works created by humans, creating confusion in how copyright should be applied to works autonomously generated by AI.²⁰

One crucial aspect of the ICL is the concept of creator or authorship. The current law explicitly recognizes only humans as subjects entitled to copyright, thereby excluding AI from being acknowledged as a creator. This limitation restricts AI's ability to legitimately claim copyright over its generated works. However, in certain cases, the entity developing or operating the AI may be considered the rightful owner of the copyright based on ownership of the work.²¹

This analysis indicates that the ICL needs to adapt to technological advancements to accommodate AI's role in the creative process. Comprehensive legislative changes may be necessary to consider acknowledging AI as an entity capable of producing original works. Such steps should align with principles of fair and equitable copyright protection while considering the practical and ethical implications of such recognition.²²

Furthermore, this analysis underscores the need for careful interpretation of the "creator" concept within the AI context and the importance of open dialogue among governments, legal experts, technology industries, and the general public to develop clear and comprehensive guidelines in addressing these challenges. Legal reforms responsive to AI technological developments are expected to create a legal environment that effectively supports innovation and protects intellectual property rights in Indonesia. However, in the current IP concept, the owner of the rights generated by AI is still human being.²³ However, it is impossible to acknowledge AI as the owner of inventorship under Indonesian law due to the characteristic of AI is not subject of law.

Ownership of IP Rights in AI Creations under IPR Regime of Indonesia

Under the current Indonesian Intellectual Property (IP) law, the ownership of IP rights in AI-generated creations is primarily assigned to the human or legal entity that owns or controls the AI. Indonesian IP law, similar to many other jurisdictions, mandates human authorship for the recognition and protection of IP rights. This applies to various forms of

²⁰ João ALBINO-PIMENTEL, Pierre DUSSAUGE, and Omar ELNAYAL, "Intellectual Property Rights, Non-Market Considerations and Foreign R&D Investments," *Research Policy* 51, no. 2 (March 1, 2022), <https://doi.org/10.1016/j.respol.2021.104442>.

²¹ Martin Kang et al., "Firm Performance and Information Security Technology Intellectual Property," *Technological Forecasting and Social Change* 181 (August 1, 2022), <https://doi.org/10.1016/j.techfore.2022.121735>.

²² Chunling Zhang and Yumei Xu, "Institutional Innovation Essence and Knowledge Innovation Goal of Intellectual Property Law in the Big Data Era," *Journal of Innovation and Knowledge* 8, no. 4 (October 1, 2023), <https://doi.org/10.1016/j.jik.2023.100417>.

²³ Yusuke Kajiwara and Kouhei Kawabata, "AI Literacy for Ethical Use of Chatbot: Will Students Accept AI Ethics?," *Computers and Education: Artificial Intelligence* 6 (June 1, 2024), <https://doi.org/10.1016/j.caeai.2024.100251>.



IP, including copyrights, patents, trademarks, and industrial designs. For instance, the Copyright Law No. 28 of 2014 explicitly states that the author must be a natural person or a legally recognized entity. Similarly, the Patent Law No. 13 of 2016 requires that the inventor be a human, thereby excluding AI from being recognized as an inventor.²⁴

When AI is utilized as a tool by humans to create works, the resulting IP is generally attributed to the person who directed, programmed, or utilized the AI. For example, if an individual uses AI to compose music or generate art, that individual would typically be considered the creator and thus the owner of the IP. This principle ensures that the human behind the AI retains control over the IP created with its assistance. However, when AI operates autonomously, producing works without direct human input, the current legal framework lacks explicit provisions to address such scenarios, leading to potential ambiguities in ownership and protection.

To address these complexities, there might be a future need for legislative reforms in Indonesia. As AI technology continues to evolve and its role in creative and inventive processes expands, updating the legal framework to explicitly cover AI-generated works could become necessary. Potential reforms could involve recognizing AI as a co-creator or establishing specific criteria for determining ownership of AI-generated IP. Such changes would align with international trends and recommendations from global IP organizations like the World Intellectual Property Organization (WIPO).²⁵

In the meantime, it is advisable for individuals and businesses using AI to clearly outline the ownership and rights of IP created through AI in their contracts and agreements. This proactive approach can help mitigate legal uncertainties and ensure proper allocation of IP rights. Additionally, seeking guidance from the Directorate General of Intellectual Property (DGIP) in Indonesia can provide further clarity on how existing laws apply to AI-related IP issues, helping stakeholders navigate the current legal landscape effectively.²⁶

The theoretical foundation for the principle that an IP owner must be human, not a robot or AI, is rooted in several key philosophical, legal, and practical considerations. First and foremost, intellectual property law has traditionally been built on the notion of human creativity and innovation. The core purpose of IP law is to incentivize and reward human effort, ingenuity, and labor. By granting exclusive rights to creators and inventors, the law aims to encourage the production of new works and inventions, thereby contributing to cultural, technological, and economic progress. This incentive structure is predicated on

²⁴ Agustin Ibanez, "Intellectual Cyborgs and the Future of Science," *Trends in Cognitive Sciences* (Elsevier Ltd, September 1, 2023), <https://doi.org/10.1016/j.tics.2023.06.004>.

²⁵ Christophe Geiger and Vincenzo Iaia, "The Forgotten Creator: Towards a Statutory Remuneration Right for Machine Learning of Generative AI," *Computer Law and Security Review* 52 (April 1, 2024), <https://doi.org/10.1016/j.clsr.2023.105925>.

²⁶ Janos Meszaros and Chih hsing Ho, "AI Research and Data Protection: Can the Same Rules Apply for Commercial and Academic Research under the GDPR?," *Computer Law and Security Review* 41 (July 1, 2021), <https://doi.org/10.1016/j.clsr.2021.105532>.



the understanding that humans have personal, social, and economic motivations to create, which are fundamentally different from the functional and operational nature of AI. AI, as a tool created and programmed by humans, lacks personal motivation, consciousness, or the ability to experience the rewards of creativity and innovation.

Secondly, the concept of legal responsibility and accountability underpins much of the legal system, including IP law. Human creators and inventors can be held accountable for their actions, ensuring that they respect the rights of others and adhere to ethical and legal standards. This accountability includes the ability to enter into legal agreements, be subject to litigation, and comply with legal obligations. AI, on the other hand, cannot be held accountable in the same way, as it lacks legal personality, consciousness, and moral agency. Granting IP rights to AI would raise complex questions about enforcement, liability, and the ethical implications of autonomous decision-making by machines.²⁷

Furthermore, the attribution of IP rights to humans reinforces the social and economic structures within which innovation and creativity occur. Humans operate within a network of social relationships, institutions, and markets that shape and are shaped by their creative outputs. Recognizing human authorship and ownership of IP ensures that the benefits of creativity and innovation flow through these networks, supporting individuals, communities, and economies. AI, while a powerful tool, operates within parameters set by human designers and users, and it is these humans who should logically and ethically benefit from the AI's outputs.

Lastly, from a practical perspective, the current legal frameworks and institutions are designed to interact with human stakeholders. Legal systems, including IP law, rely on human attributes such as intent, originality, and inventiveness, which are difficult to ascribe to AI. Modifying these systems to accommodate AI ownership would require substantial changes to legal definitions, enforcement mechanisms, and ethical guidelines, potentially creating more challenges than it resolves.²⁸

Therefore, the theoretical reasons for requiring IP owners to be human rather than AI stem from the foundational goals of IP law to incentivize human creativity, the necessity of legal responsibility and accountability, the socio-economic context of innovation, and the practical considerations of the current legal framework. These reasons collectively support the notion that IP rights should remain within the domain of human creators and inventors.²⁹

²⁷ Sean Sands et al., “Principles for Advertising Responsibly Using Generative AI,” *Organizational Dynamics* 53, no. 2 (April 1, 2024), <https://doi.org/10.1016/j.orgdyn.2024.101042>.

²⁸ Colin R. Davies, “An Evolutionary Step in Intellectual Property Rights - Artificial Intelligence and Intellectual Property,” *Computer Law and Security Review* 27, no. 6 (December 2011): 601–19, <https://doi.org/10.1016/j.clsr.2011.09.006>.

²⁹ Amy J.C. Trappey, Mihai Lupu, and Josip Stjepandic, “Embrace Artificial Intelligence Technologies for Advanced Analytics and Management of Intellectual Properties,” *World Patent Information* 61 (June 1, 2020), <https://doi.org/10.1016/j.wpi.2020.101970>.



Conclusion

The development of artificial intelligence presents new challenges for intellectual property law. The ability of AI to create original works and innovative inventions disrupts traditional notions of authorship, inventorship, and ownership. Addressing these challenges requires a multi-faceted approach. Appropriate legal reforms are necessary to redefine key concepts and criteria within IP law to accommodate AI-generated works. International cooperation is essential to harmonize regulations and ensure consistent protection across different jurisdictions. Therefore, it is crucial to foster ongoing dialogue among policymakers, legal professionals, technologists, and other stakeholders to develop a comprehensive understanding of AI's impact on intellectual property. Continuous monitoring and evaluation of AI advancements and their implications for IP law will help maintain the relevance and effectiveness of the legal framework. By proactively adapting to technological changes, the intellectual property system can continue to incentivize innovation while ensuring equitable protection for all creators, whether human or artificial. While the rise of AI introduces significant complexities into the realm of intellectual property, it also offers an opportunity to modernize and strengthen the legal system. By embracing thoughtful reforms and fostering international collaboration, we can create a robust IP framework that supports and protects innovation in the digital age. Therefore, amending IP Laws in Indonesia is needed to accommodate and tackle challenges of AI to IP Law.

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Conflict of Interest

None

Author(s) Contribution

Author 1: initiated the research ideas, instrument construction, data collection, analysis, and draft writing; and

Author 2: revised the research ideas, literature review, data presentation and analysis, and the final draft.

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