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Topic: Human Right Issues of Artificial Intelligence (AI) Gaps and Challenges, and Affected Future Legal Development in Various Countries

**Legal Transformation and Use of Blockchain Technology in Increasing
Government Transparency and Accountability in Indonesia**

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Abstract. *The application of blockchain technology has become a major concern in efforts to increase government transparency and accountability in Indonesia. This research aims to explore the legal transformation that occurs along with the use of blockchain technology in the context of government in Indonesia and its impact on transparency and accountability. The research method used is a normative analysis of the existing legal framework as well as case studies related to the implementation of blockchain technology in several government institutions in Indonesia. Through this analysis, it was found that the use of blockchain technology can bring significant benefits in increasing government transparency and accountability, but also raises various legal challenges that need to be overcome. A clear and adaptive legal framework and a deep understanding of the implications of blockchain technology are needed to ensure effective and sustainable implementation in the Indonesian governance context. It is hoped that this research can contribute to further understanding of the legal transformation and use of blockchain technology in the context of government in Indonesia and provide guidance for the development of related policies and practices in the future.*

Keywords: *Blockchain Technology; Government Indonesia; Legal Transformation.*

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1. Introduction

The development of information technology has had a major impact on various aspects of life, including the world of business and law. One technology that is gaining increasing attention in this context is *blockchain technology*. *Blockchain* technology has changed the paradigm in terms of storing and exchanging information, especially in the context of contract transactions in Indonesia. In recent years, *blockchain technology* has created a significant breakthrough in various sectors, including the financial industry. *Blockchain*, which is a decentralized distribution technology, provides a secure and transparent mechanism for recording and verifying transactions.¹

Blockchain is a form of technology decentralization that creates a *peer-to-peer network* which is secure, transparent, and immutable. By using blockchain, each transaction can be recorded permanently in a block that links to previous blocks, creating an audit trail that is not easily changed. By using *blockchain*, each transaction can be recorded permanently in a block that links to previous blocks, creating an audit trail that is not easily changed.²

In the book " *Blockchain Technology and Business Transformation* ", the concept of blockchain is explained as a technology that enables an immutable and distributed transaction record across the network, which significantly improves data integrity and security and *blockchain technology* in contractual transactions can help overcome trust issues between parties and improve the efficiency of business processes.³ Indonesian law is also starting to recognize the role of *blockchain technology* in a legal context. Law Number 10 of 2020 concerning the Second Amendment to Law Number 1 of 2009 concerning Information and Electronic Transactions (UU ITE) provides the legal basis for the use of blockchain technology in electronic transactions. Thus, the application of *blockchain technology* can provide a strong legal basis for contractual transactions in Indonesia.⁴

¹Leny Megawati, Cecep Wiharma, Asep Hasanudin, *The Role of Blockchain Technology in Increasing Security and Legal Certainty in Contract Transactions in Indonesia*, Mimbar Justitia Law Journal Faculty of Law, Suryakancana University Vol. 9 No. 2 – December 2023, p. 410-435, p. 411.

²Iman Supriadi, *Tax System Transformation Using Blockchain Technology to Increase Transparency and Reduce Deviations*, Journal of Tax Policy, Economics, and Accounting, Volume 2 Number 1 February 2024e-ISSN 2987-5366, p. 30.

³Maria Brown, 2019, *Blockchain Technology and Business Transformation*, XYZ, matter. 87–102.

⁴ Leny Megawati, Cecep Wiharma, Asep Hasanudin, *The Role of Blockchain Technology in Improving Security and Legal Certainty in Contract Transactions in Indonesia*, Jurnal Law of the Judiciary, Faculty of Law, Suryakancana University Vol. 9 no. 2 – December 2023, p. 410-435, pp. 412.

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Although the use of *blockchain technology* has some risks and limitations, this technology can provide significant benefits for data security in digital transformation. In implementing *blockchain* for data security, it is important to select the type of blockchain that best suits the organization's needs and consider the benefits and risks associated with *blockchain use*. Additionally, it is also important to consider the need for integration with existing systems and the ability to overcome the limitations of *blockchain technology*. Data security in digital transformation becomes very important because data can be accessed by unauthorized parties and used for detrimental purposes. In this context, *blockchain technology* can improve data security in several ways. First, *blockchain* allows data to be stored in a decentralized and encrypted manner, thereby increasing data security. Because data is not stored centrally, it is difficult for people to steal data or change it without the approval of the entire *blockchain network*. Second, in *blockchain technology*, every transaction and data can be verified by all parties involved. This increases transparency and reduces the risk of fraud. Third, the verification and validation process in *blockchain technology* is very efficient and fast, because it does not require intermediaries or third parties.⁵

In carrying out law enforcement as a process, legal certainty is crucial as a follow-up step to legal facts. Ensuring that the law is applied clearly and fairly is a fundamental principle in maintaining the integrity of the legal system in Indonesia. However, when there are problems related to auditors being able to manipulate records, this can lead to potential deviations according to their wishes. The existence of such loopholes creates vulnerabilities in the system, resulting in the need to implement innovative and sophisticated solutions, such as *blockchain technology*, to increase transparency and address trust issues in financial audits. The *blockchain* concept is considered a potential solution to overcome these challenges. *Blockchain* has the potential to improve security and record-keeping constraints and reduce the risk of manipulation by unscrupulous auditors.⁶

Legal certainty in contract transactions in Indonesia is often a problem that must be overcome. Lack of transparency, difficulties in verifying data, and inefficient dispute resolution processes often become obstacles. Therefore, it is important to introduce the concept of *blockchain technology* as a possible solution to overcome this problem. Indonesia itself has shown interest

⁵Tito Wira Eka Suryawijaya, *Strengthening Data Security through Blockchain Technology: Exploring Successful Implementation in Digital Transformation in Indonesia*, JSKP, Journal of Public Policy Studies 2 (1), 55–67, p. 57.

⁶Lewiandy, Ibra Fulenzi, Britney Wilhelmina Berlian, Berliana Deslita, *The Important Role of Blockchain in the BPK Carrying out the Main Duties and Functions in Law Enforcement in Indonesia*, INNOVATIVE: Journal Of Social Science Research Volume 3 Number 6 Year 2023, Pages 2869-2882, p. 2871.

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and steps in understanding and adopting *blockchain technology*. There are efforts from the government and related institutions to explore the potential of this technology in various sectors, from finance to logistics. However, the understanding and application of this technology in a legal context, particularly in contractual transactions, is still in the development stage.⁷

There are challenges in using technology *blockchain* includes aspects of immature legal regulations, the need for strong infrastructure, and a lack of understanding of *blockchain technology* in the Indonesian government. The aim of this research is to identify how the country is overcoming these challenges and exploiting the full potential of *blockchain technology* in increasing government transparency and accountability in Indonesia. In addition, this research aims to identify the potential use of *blockchain technology* for transparency and reducing irregularities in government systems. Based on available sources, researchers will focus on a number of problem formulations, namely: how does the legal implementation affect the use of *blockchain technology* in the context of government in Indonesia? and how can *blockchain technology* be applied in the context of government in Indonesia to increase transparency and accountability?

2. Research Methods

This research uses a normative juridical method to link existing problems with the background to which the problem emerged, which is then analyzed using a qualitative legal thinking framework. This research identifies and examines the basic concepts of *blockchain* and observes the development of its application to test how much benefit can be obtained from using *blockchain*. The results of this analysis lead to mapping the potential and risks of *blockchain* as well as the possibility of implementing it in the Indonesian government. The data model used comes from primary legal materials consisting of various journal articles, books and papers related to the use and development of *blockchain technology* which were selected taking into account the latest research results. Apart from that, primary legal materials were also added to prepare the *blockchain legal framework* in Indonesia.⁸

⁷Leny Megawati, Cecep Wiharma, Asep Hasanudin, *The Role of Blockchain Technology in Increasing Security and Legal Certainty in Contract Transactions in Indonesia*, Mimbar Justitia Law Journal Faculty of Law, Suryakancana University Vol. 9 No. 2 – December 2023, p. 410-435, p. 414.

⁸ Satria Muhammad Nur Lase, Aisyah Adinda, Rizkia Diffa Yuliantika, *Legal Framework for Blockchain Technology Based on Cyber Law in Indonesia*, *Padjadjaran Law Review* Journal Volume 9, Number 1, 2021, p. 2.

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3. Results and Discussion

3.1. Implementation of Laws That Influence the Use of *Blockchain Technology* in the Government Context in Indonesia

Blockchain Technology was first conceived in the early 1990s, but it was not until the emergence of Bitcoin in 2009 that it received widespread attention. This technology has attracted intense attention from the academic community and has been adapted for diverse applications such as improving food traceability, securing electronic health records, and other data management issues. This technology has also been the subject of numerous patents, with three-quarters of *Blockchain patents* AS comes from the United States . Sustainable value for *Blockchain patents* found to be positively and exclusively associated with the software industry for originality and with the hardware industry for generality . *Blockchain Technology* it has also been applied to accounting and auditing, with the potential to increase transparency and reduce fraud . Overall, *Blockchain technology* has a rich history and continues to evolve as new applications are discovered and developed .⁹

blockchain technology in digital transformation in Indonesia has great potential to improve data security and operational efficiency. Although it still faces several challenges, such as limited infrastructure, lack of understanding of *blockchain technology* , and unclear regulations, the government and private sector can work together. to overcome these challenges and accelerate the adoption of *blockchain technology* in Indonesia. With the right adoption of *blockchain technology* , Indonesia can become an important player in the global blockchain ecosystem and strengthen its position as a country undergoing rapid digital transformation. Apart from the challenges faced, the implementation of *blockchain technology* in digital transformation in Indonesia also has the potential to provide great benefits. The use of *blockchain technology* in digital transformation can increase efficiency, transparency and data security in various sectors, such as the financial, health and education sectors. The implementation of *blockchain technology* can also help increase public involvement in government processes, such as through a secure and transparent electronic voting system. The Indonesian government has also realized the great potential of *blockchain technology* in digital transformation. The Indonesian government has committed to increasing the use of *blockchain technology* in various sectors.¹⁰

⁹Dondy Indraprakoso , Haripin , *Exploring the Potential Use of Blockchain In Optimizing Port Management in Indonesia: Literature Review* , Management and Business Sanskara Vol. 01, No.03, July, p.140~160 , p. 142.

¹⁰Tito Wira Eka Suryawijaya , *Strengthening Data Security through Blockchain Technology: Exploring Successful Implementations in Digital Transformation in Indonesia Strengthening Data Security through Blockchain Legal Transformation and Use of Blockchain Technology in Increasing ... (Erdo Pramudya Sandi, Anis Mashdurohatun & Bambang Tri Bawono)*

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A thorough analysis of the legal implications of the use of *blockchain technology* in business in Indonesia. First of all, we need considering Law no. 11 of 2008 concerning Information and Transactions Electronic (ITE) which regulates various aspects of electronic transactions, including use blockchain technology . In this context, it is important to understand how the law contracts apply in transactions carried out via *blockchain technology*, as well legal protection for the parties involved .¹¹

In the legal field, Indonesia has Law Number 19 of 2016 concerning Amendments to Law number 11 of 2008 concerning Electronic Information and Transactions which plays a role in protecting all activities based on electronic media. Next, Indonesia also has Law Number 24 of 2019 concerning the Creative Economy as well as a Presidential Regulation concerning Rindekraf.¹²

The need for an active role from the community in monitoring state finances is also a major factor in efforts to prevent cases of criminal acts of corruption in Indonesia. So there is a need for a state financial management system where the public can take an active role in the financial supervision process. In implementing the *Blockchain system* , the public or people within the system network can play an active role in monitoring the course of state financial circulation through the digital platform network. In this system, the public can clearly know the direction in which the state's financial budget is running so that if fraud or discrepancies occur, the perpetrator or problem can be immediately detected. ¹³In other words, the implementation of the *Blockchain system* is open or transparent regarding the running of State finances.¹⁴

Blockchain is also further explained as an information technology-based financial transaction bookkeeping service that records and stores proof of transaction or ledger data distributed over computer networks, both private and public. This legislation shows that there is development

Technology: Exploring Successful Implementations in Digital Transformation in Indonesia , Journal of Public Policy Studies, Vol. 2 (1z0, 55-67, p. 64.

¹¹ Dewa Rohid , *Legal Implications of Using Blockchain Technology in Business in Indonesia* , Faculty of Law, Medan Area University, p. 6.

¹² Pandi Working Group on Blockchain 2023, *Blockchain Technology and Its Potential Use in Indonesia*, Id Expressing Your Freedom, Pg. 44.

¹³Ravy Mauludy Baza, Agil, *The Important Role of Blockchain Digital Technology in Efforts to Reduce Corruption Cases of Securities Embezzlement* , Journal of Law and Social Politics Vol.1, No.3 August 2023, matter. 51

¹⁴ Ravy Mauludy Baza, Agil, *The Important Role of Blockchain Digital Technology in Efforts to Reduce Corruption Cases of Securities Embezzlement* , Journal of Law and Social Politics Vol.1, No.3 August 2023, matter. 52.

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of blockchain regulations in *fintech payment systems*.¹⁵ The application of *blockchain* technology in the Indonesian financial system presents various legal implications that need to be considered, especially in relation to existing regulations and legal articles. One important aspect to pay attention to is how *blockchain technology* interacts with existing laws.¹⁶

3.2. Blockchain technology can be applied in the context of government in Indonesia to increase transparency and accountability

blockchain technology can be in line with the application of legal provisions so that it can provide strong protection for creative works produced by someone so that they can be used by the public fairly and do not interfere with the rights of the owner of the work. These two provisions contain aspects of the public interest in terms of prohibiting changing or hacking technology as a form of security for a creation.¹⁷ In line with the previous discussion, from a practical perspective, the use of *blockchain technology* in Indonesia is starting to be used for the benefit of the public sector by creative economic bodies as government representative institutions in the development of creative industries in Indonesia.¹⁸

In Indonesia, *blockchain technology* already has a legal umbrella. One of them is through Minister of Trade Regulation no. 99 of 2018 concerning General Policy for Implementing Crypto Asset Futures Trading.¹⁹ On the other hand, Law no. 25 of 2009 concerning Public Services is also necessary considered, especially in the context of implementing *blockchain technology* in public service. The use of *blockchain technology* in public services can increase efficiency and transparency, but also need to pay attention to compliance to the public service standards established by the law.

¹⁵Gabriella Rachel Mansula , *Legal Protection for Legal Settlement of Non-Functional Transaction Processes Through SMART Contracts on Blockchain Systems* , Al Qodiri, Educational, Social and Religious Journal, Volume 21 Number 2 August 2023, p. 794.

¹⁶William Vincent Purba , *Legal Implications of the Use of Blockchain Technology in the Financial System in Indonesia* , Faculty of Law, Medan Area University, Indonesia , p. 5-6.

¹⁷Maya Ruhtiani , Yuris Tri Naili, *Legal Protection of Copyrighted Works Through Blockchain Technology Based on the Perspective of Intellectual Property Rights in Indonesia*, Galuh Justisi Scientific Journal, Volume 11 Number 2- September 2023, p. 208

¹⁸Maya Ruhtiani , Yuris Tri Naili, *Legal Protection of Copyrighted Works Through Blockchain Technology Based on the Perspective of Intellectual Property Rights in Indonesia*, Galuh Justisi Scientific Journal, Volume 11 Number 2- September 2023, p. 209.

¹⁹ Binus University, "Getting to Know Blockchain, the Technology Predicted to Be the Most Influential in the Future". Available on the website: <https://binus.ac.id/2021/02/mengenal-blockchain-technology-yang-diprediksi-paling-berinfluence-di-masa-depan/> . Accessed on April 23 2024.

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Not only that, regulations relating to taxation also become relevant in the context of using *blockchain technology* in business. Law no. 36 2008 concerning Income Tax, as well as other regulations related to taxation, needs to be considered in identifying the tax implications of transactions which is done through *blockchain technology*. Furthermore, in terms of financial sector regulation, Law no. 21 years 2011 concerning the Financial Services Authority (OJK) has significant relevance. OJK has an important role in supervising and regulating banking activities, capital markets, and other financial institutions that could be affected by the use of *blockchain technology*. Apart from that, regulations relating to banking and payment systems as well needs to be considered, as regulated in Law no. 23 of 1999 concerning Bank Indonesia and Law no. 7 of 2011 concerning Currency. Legal implications of using *blockchain technology* in terms of payment systems and banking activities need to be considered carefully.²⁰

Unclear regulations are also a challenge in adopting *blockchain technology* in Indonesia. Even though the Indonesian government has issued several regulations regarding *blockchain technology*, there are still many regulations that are unclear and need to be clarified. Some things that need to be regulated include data security, consumer protection and taxes. Clear and transparent regulations will provide legal certainty and make it easier to use *blockchain technology* in Indonesia. To accelerate the adoption of *blockchain technology* in Indonesia, the government system and private sector need to continue to encourage and support the use of this technology. Governments can provide incentives for companies and startups developing *blockchain solutions*, such as lower taxes or easier access to funding. In addition, the government can collaborate with blockchain companies in developing *blockchain solutions* that suit the needs of Indonesian society. Meanwhile, the private sector can also play an active role in adopting *blockchain technology*. Companies can develop *blockchain solutions* to improve data security, increase operational efficiency, and reduce costs.²¹

Blockchain technology is regulated in the Minister of Communication and Information Technology (PM Kominfo) Regulation No. 3 of 2021 concerning Business Activity Standards and Product Standards in the Implementation of Risk-Based Business Licensing in the Postal, Telecommunications and Electronic Systems and Transactions Sector (Appendix I Number 3 no. 2 letter a). PM Kominfo is an implementing regulation of Government Regulation (PP) no. 5 of

²⁰ Dewa Rohid, *Legal Implications of Using Blockchain Technology in Business in Indonesia*, Faculty Law, Medan Area University, Indonesia, p. 8.

²¹ Tito Wira Eka Suryawijaya, *Strengthening Data Security through Blockchain Technology: Exploring Successful Implementations in Digital Transformation in Indonesia*, *Strengthening Data Security through Blockchain Technology: Exploring Successful Implementations in Digital Transformation in Indonesia*, Journal of Public Policy Studies, Vol. 2 (1z0, 55-67, p. 64).

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2021 concerning the Implementation of Risk-Based Business Licensing (Article 6 Paragraph (7) *in conjunction with* Article 149 Paragraph (5) letter a) . National regulations as the basis for the legality of *blockchain-smart contracts* refer to the Civil Code (KUH Perdata), Law (UU) no. 19 of 2016 concerning Amendments to Law no. 11 of 2008 concerning Information and Electronic Transactions (ITE), Government Regulation (PP) no. 71 of 2019 concerning Implementation of Electronic Systems and Transactions (PSTE), and PP No. 80 of 2019 concerning Trading Through Electronic Systems (PMSE).²²

Blockchain is a renewable digital technology that is decentralized. Furthermore, *blockchain technology* can enable transactions with distributions recorded in a digital ledger or *distributed ledger technology* . Then, based on Article 20 paragraph 1 letter b CoFTRA Regulation 8/2021, in preparing Crypto Asset storage operations, Crypto Asset Storage Managers must pay attention to the governance and storage of Crypto Assets, one of which has storage capabilities that support Crypto Assets in various types of protocols. *blockchain* by paying attention to the security of communication links. So, in the existence of Crypto Assets, it must support the existence of an adequate *blockchain system*. Apart from that, Article 24 paragraph (3) letter b CoFTRA Regulation 8/2021 also states that one of the requirements for a Crypto Asset Physical Market Trading Organizer must be having 1 expert in the field of *blockchain* and Crypto Assets.²³

Indonesia as one of the WTO member countries has implemented and adjusted the TRIPs-WTO Agreement in positive law through the following statutory regulations: 1) Copyright (Law Number 28 of 2014); 2) Patents (Law Number 3 of 2016); 3) Brand (Number 15 of 2001); 4) Plant Varieties (Law Number 29 of 2000); 5) Trade Secrets (Law Number 30 of 2000) 6) Industrial Design (Law Number 31 of 2000); and 7) Integrated Circuit Layout Design (Law Number 32 of 2000). Regulations regarding Patents were previously regulated in Law Number 14 of 2001 concerning Patents. As time goes by, this law is considered to be no longer in accordance with legal developments that have occurred until now. So the government issued Law Number 13 of 2016 (hereinafter referred to as the Patent Law) which replaced Law Number 14 of 2001 concerning Patents. A patent is a special right granted by law to an inventor or number of people (inventors) who must be applied for to the state, especially inventions or ideas in the field of technology, inventions that enhance existing inventions or new improvements to working

²² Dhanang Widijawan . 25 May 2023. "*Blockchain, Supply Chain, and Smart Contracts*". Available on the website: <https://supplychainindonesia.com/blockchainsupply-chain-dan-smart-contract/> . Accessed April 23, 2024.

²³ Reza Yusuf Febryan. 20 July 2023. " *Legality of Bitcoin and Blockchain as Commodities and Financial Technology in Indonesia*". Available on the website: <file:///C:/Users/ASUS/Downloads/AUTHOR%20JURNAL.pdf> . Accessed April 23, 2024.

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methods, for as long as certain period of time. As an exclusive right, a patent can also be abolished which results in the loss of all legal consequences relating to the Patent and other matters originating from the Patent in question.²⁴

4. Conclusion

blockchain technology in the context of government in Indonesia has great potential to increase transparency and accountability. By utilizing the advantages of this technology in storing data in a decentralized manner that cannot be manipulated, the government can ensure data integrity and increase public trust in government institutions. The use of *blockchain* technology in Indonesia has complex and diverse legal implications. Various regulations, such as the Law on Information and Electronic Transactions, the Law on Consumer Protection, and regulations related to personal data protection, are very important to consider in the context of implementing this technology. However, to gain the full benefits of *blockchain technology*, a clear and measurable legal framework is needed. Good regulations can provide legal certainty for the use of *blockchain* in various government sectors, as well as protect the privacy and security of data stored on *blockchain platforms*.

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²⁴ Ida Ayu Vipra Girindra, *Potential Use of Blockchain in Intellectual Property Rights Management in Indonesia: Opportunities and Obstacles*, Journal of Legal Essence Volume 5 No. 1 June 2023, p. 84.

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