

A examination on personal data protection in metaverse technology in Indonesia: a human rights perspective



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Abstract

The objective of this study is to elucidate the challenges presented by technological advancements, namely digital metaverse technology, with regard to safeguarding personal data in Indonesia. This study also investigates these issues via the lens of human rights. The research methodology employed in this study encompasses a mixed approach, combining socio-legal and normative research methods. The research findings indicate that there is a pressing need for the safeguarding of personal data in Indonesia, particularly in light of the escalating number of incidents and the advancement of the information technology sector. The significance of metaverse technology should not be underestimated, thereby necessitating a thorough legislative reform to address the associated difficulties. The enactment of the PDP Law represents the initial measure taken by the government to establish a framework for the administration of personal data protection. The active participation of all stakeholders, particularly those in the digital economy industry, is vital in the formulation and implementation of rules. Additionally, it is crucial to adhere to the principles of Data Protection By Design and By Default. The PDP Law encompasses various significant provisions that can be utilised by the Indonesian government to enforce personal data protection measures and impose penal consequences upon those who breach the regulations stipulated within this legislation. The PDP Law serves as a legal framework that holds applicability not only inside national boundaries but also extends to international jurisdictions, particularly in the context of the contemporary metaverse.

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1. Introduction

The proliferation of technological advancements has permeated several regions throughout the nation. The advancement of technology is progressively driving various facets of individuals' life. The pace of technological advancement is accelerating in tandem

with the growing integration of individuals into the digital realm.¹ This phenomenon is instigated by individuals' inclination towards practicality and efficiency in several aspects of life. The present advancements in technology have brought about transformative shifts across multiple domains of human existence. With the advent of the Industrial Era 5.0, technology has ushered humanity into a realm devoid of spatial and temporal constraints.² The increasing adoption of technology has significantly enhanced human communication capabilities, particularly in light of our inherently social nature. The virtual realm serves as a viable means to connect individuals, overcoming the barriers of physical separation and temporal constraints. The contemporary and advanced technology of today serves as a conduit for a highly transparent worldwide information network, which can be regarded as an indication of the third wave society. This societal phase is distinguished by the advent of the internet and electronic devices, enabling users to swiftly access information from various global sources via cyberspace. The metaverse world is a highly prominent technology that is now undergoing significant advancements.³

The etymology of the phrase "metaverse" can be traced back to the combination of two root words: "meta," denoting transcendence or virtuality, and "universe," referring to a world or cosmos. The term "universe" within the context of the metaverse pertains to the digital representation of our physical world, conveyed through digital platforms such as smartphones and the internet. Consequently, the metaverse can be understood as an alternate reality, existing independently from our tangible reality, and experienced using virtual reality technologies.⁴ Users of the Metaverse have the ability to employ a diverse range of avatars to engage in a multitude of activities, encompassing social interactions, regardless of their impact on real-life existence. One such activity that can be undertaken is the transfer of virtual assets. These transfers are sometimes referred to as buying and selling transactions. Virtual assets can be characterized as intangible representations of value that can be exchanged or sent electronically, or can be employed for the purposes of payment or investment. Virtual assets, as defined in the Financial Action Task Force (FATF) recommendations, do not encompass digital representations of fiat currencies, securities, or other financial assets that are already addressed in other sections of the FATF recommendations.⁵

¹ Wisnu Prabowo, Satriya Wibawa, and Fuad Azmi, 'Perlindungan Data Personal Siber Di Indonesia', *Padjadjaran Journal of International Relations*, 1.3 (2020), 218 <<https://doi.org/10.24198/padjir.v1i3.26194>>.

² Wei Hu, Tohru Yoshioka-Kobayashi, and Toshiya Watanabe, 'Determinants of Patent Infringement Awards in the US, Japan, and China: A Comparative Analysis', *World Patent Information*, 60.July 2018 (2020), 101947 <<https://doi.org/10.1016/j.wpi.2019.101947>>.

³ Arthur Nguyen and Nil Özçaglar-Toulouse, 'Nation Branding as a Market-Shaping Strategy: A Study on South Korean Products in Vietnam', *Journal of Business Research*, 122.September 2019 (2021), 131–44 <<https://doi.org/10.1016/j.jbusres.2020.08.029>>.

⁴ Brian Z. Tamanaha, *Sociological Approaches to Theories of Law, Sociological Approaches to Theories of Law*, 2022, MMMMMDCCCXV <<https://doi.org/10.1017/9781009128193>>.

⁵ Florian Horky and others, 'Don't Miss out on NFTs?! A Sentiment-Based Analysis of the Early NFT Market', *International Review of Economics and Finance*, 2023 <<https://doi.org/10.1016/j.iref.2023.07.016>>.

The concept of the virtual realm known as the "Metaverse" has garnered significant attention and discussion among both Indonesian and international communities. The global community is preparing for the advent of mixed reality (MR), a technological advancement that enables individuals to convene and engage effortlessly inside a vast array of three-dimensional (3D) virtual environments.⁶ Furthermore, as a result of the global pandemic known as the Corona Virus Disease (Covid-2019), there have been imposed limitations on the physical mobility of individuals. The government, particularly in Indonesia, must make necessary preparations to address the opportunities and challenges associated with the future of adaptive internet sophistication. This is crucial in order to effectively facilitate and accommodate the gradual integration of the "metaverse" into various aspects of individuals' lives, including education, property, entertainment, and business. The comprehensive assimilation of the 'new world' necessitates the implementation of robust security mechanisms via regulatory frameworks or legislative measures.⁷

According to Matthew Ball, as stated by Dr. Liew, the Metaverse can be best defined as... The metaverse refers to a vast interconnected network of three-dimensional virtual environments that are synced in real time and accessible to a limitless number of users. These virtual worlds maintain data continuity, encompassing various aspects such as user identity, historical records, rights, objects, communication, and financial transactions. The inception of the metaverse concept may be traced back to the year 1992, when it was introduced in the science fiction literary work titled *Snow Crash*, authored by Neal Stephenson, an American novelist. In the novel *Snow Crash*, the characters assume the roles of avatars and engage in occupational activities within a three-dimensional (3D) virtual environment known as the metaverse.⁸ The term "Metaverse" denotes a digital realm that transcends the boundaries of physical reality. The term in question is a composite word formed by combining the morphemes "meta," which denotes transcendence and virtuality, with "universe," which refers to the world and the cosmos. The concept pertains to the notion of the digital realm as an emerging domain manifested through digital platforms, including cellphones and the internet. Following the emergence of the metaverse concept, considerable endeavors and scholarly investigations were undertaken to materialize the metaverse. In 2006, the Acceleration Studies Foundation (ASF), a research group focused on the metaverse, unveiled the metaverse roadmap. The text introduced the notion of the metaverse and outlined four distinct forms of metaverse. It suggested considering the metaverse as a convergence or amalgamation of the physical

⁶ Yenny Eta Widyanti, 'The Urgency of Sui Generis Protection of Communal Intellectual Property in Indonesia: A Comparative Study in Philippines', *Juridictie: Jurnal Hukum Dan Syariah*, 13.1 (2022), 1–23 <<https://doi.org/10.18860/j.v13i1.16467>>.

⁷ Alif Kharismadohan, 'Typosquatting Crime in the Electronic Transactions', *Law Research Review Quarterly*, 7.1 (2021), 111–24 <<https://doi.org/10.15294/lrrq.v7i1.143188>>.

⁸ Muhammad Asrul and Shilla Hasmara, 'Explaining Legal Implications: Ownership Analysis Of Intellectual Property Rights On Cryptokitties Platforms', *Wacana Hukum*, 29.1 (2023), 1–13.

world with virtual reality.⁹

The emergence of public interest in the Metaverse can be traced back to the dissemination of rumors in mid-October 2021 regarding Facebook's rebranding efforts. The Chief Executive Officer (CEO) of Facebook, Mark Zuckerberg, recently made a public declaration regarding the rebranding of the company from Facebook to Meta. This strategic shift in nomenclature aligns with the company's renewed emphasis on the development of a virtual realm known as the Metaverse, which integrates technologies such as Virtual Reality (VR) and Augmented Reality (AR). In addition, Microsoft has incorporated holographic technology and is currently engaged in the advancement of Mixed and Extended Reality (XR) applications through the utilization of the Microsoft Mesh platform. This platform aims to seamlessly integrate the physical environment with Augmented Reality and Virtual Reality experiences. Furthermore, several renowned worldwide musicians, like Snoop Dogg, Huang Heshan, and JJ Lin, have acquired digital assets within the Metaverse. In addition, there exist performers who conduct virtual concerts within the Metaverse, including notable figures such as Justin Bieber, Twenty One Pilots, and John Legend.¹⁰

The Metaverse is enhanced by a variety of interactive games, including Second Life, Fortnite, Minecraft, and Roblox. Within this virtual realm, gamers have the opportunity to engage in collaborative work, participate in events, and even conduct transactions involving real-world currency for virtual commodities and services. As previously elucidated, the metaverse denotes the process by which the physical realm undergoes a transformation into a virtual world characterized by three-dimensional attributes, accomplished through the use and advancement of digital technology. Indonesia is currently in the process of implementing adaptations in many important areas as a means of transitioning towards the metaverse realm. Two prominent banks in Indonesia, namely PT Bank Negara Indonesia Tbk (BNI) and PT Bank Rakyat Indonesia Tbk (BRI), have recently declared their intention to venture into the realm of virtual reality. This endeavor would be facilitated by WIR Group, a company specializing in virtual reality technology, operating under the name Metaverse Indonesia. It is evident that numerous facets of commerce might be facilitated by metaverse digital technology, encompassing activities like stock investment and blockchain-based ownership of assets within the metaverse. In addition to facilitating the operations of micro, small, and medium enterprises (MSMEs), the digital economy and copyright provisions enable users to engage in activities without the need for physical presence.

In addition to the numerous advantages and opportunities that can be embraced in daily life, it is important to acknowledge that the convenience and complexity of technology also present several challenges in order to effectively optimize the role and

⁹ Partha Pratim Ray, 'Web3: A Comprehensive Review on Background, Technologies, Applications, Zero-Trust Architectures, Challenges and Future Directions', *Internet of Things and Cyber-Physical Systems*, 3.April (2023), 213–48 <<https://doi.org/10.1016/j.iotcps.2023.05.003>>.

¹⁰ Sen Li and Yan Chen, 'How Nonfungible Tokens Empower Business Model Innovation', *Business Horizons*, 66.4 (2023), 543–54 <<https://doi.org/10.1016/j.bushor.2022.10.006>>.

protection of the state in response to the inevitable emergence of metaverse technology. This technology is expected to gain widespread usage and demand among the Indonesian population, thereby necessitating the urgent need to reform business laws and regulations. Bonifasius Wahyu Pudjianto thinks that a thorough examination of the metaverse's influence on the forthcoming digital economy is warranted.¹¹ According to JP Morgan, the metaverse is expected to permeate all sectors of the economy. The projected economic opportunity is expected to be around \$1 trillion annually. Moreover, it has been projected that by the year 2026, around 25% of individuals will allocate a minimum of one hour each day engaging in activities within the metaverse. Indeed, it is projected that approximately 30 percent of global enterprises will possess products and services that are freely available within the metaverse. Dynamics within society's social fabric invariably manifest and exert significant influence on the implementation of regulations within a community. These societal transformations have the potential to facilitate ongoing societal progress in accordance with the prevailing era. Social change affects not only the field of law, but also various other domains of life, including the environment, economy, culture, and technology. The potential modifications may pertain to the broader scope of the environment, encompassing social values, norms, behavioral patterns, structures, organizations, institutions, societal strata, social relationships, and the communication systems themselves. Additionally, this topic encompasses concepts such as power dynamics, authority structures, social dynamics, and technology advancements, among others.¹²

Technological variables have the capacity to alter the communication system and social ties inside contemporary society. Furthermore, the rapid advancement of communication technology plays a crucial role in driving social transformation. As previously shown, cultural transformation has the potential to result in societal transformation, while it is not an obligatory outcome. Culture is a cumulative phenomenon. The development of culture is characterized by a gradual growth throughout time. Continuous innovation is a constant occurrence, with novel additions being made to existing entities. The process of development does not include the elimination of the old; rather, it involves the incorporation of new findings in diverse domains, so augmenting existing knowledge with novel insights. In conjunction with the incorporation of these cultural components, the socio-economic fabric or culture itself undergoes transformation.¹³

¹¹ Philipp A Rauschnabel and others, 'What Is XR? Towards a Framework for Augmented and Virtual Reality', *Computers in Human Behavior*, 133 (2022), 107289 <<https://doi.org/https://doi.org/10.1016/j.chb.2022.107289>>.

¹² Hayder Albayati, Noor Alistarbadi, and Jae Jeung Rho, 'Assessing Engagement Decisions in NFT Metaverse Based on the Theory of Planned Behavior (TPB)', *Telematics and Informatics Reports*, 10.December 2022 (2023), 100045 <<https://doi.org/10.1016/j.teler.2023.100045>>.

¹³ Yogesh K Dwivedi and others, 'Metaverse beyond the Hype: Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice and Policy', *International Journal of Information Management*, 66 (2022), 102542 <<https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2022.102542>>.

Technology is a product of human ingenuity designed to enhance human convenience and facilitate various aspects of daily life. Hence, it is imperative to safeguard human-created technology through legal frameworks, as the improper utilization of technology might pose risks to human well-being. One facet of contemporary technology encompasses the field of information technology.¹⁴ Information technology (IT) can be characterized as a contemporary technology that has emerged as a result of advancements in various fields. The advent and subsequent exploitation of information technology have led to the emergence of various technological advancements, including artificial intelligence, computers, software engineering, and the internet, among others. The development of informatics technology, also known as telematics technology, has emerged as a significant area of interest in various countries, including Indonesia.¹⁵

Telematics technology is a sort of telecommunication that facilitates the transport of information, serving as a fundamental technology that enables the provision of diverse and advanced services. The subject of contention among the global community pertains to telematics technology, specifically the existence of metaverse technology that enables individuals to enter a virtual realm while experiencing a sensory environment akin to the physical world. Telematics technology facilitates user interaction through the utilization of digital content presented on internet platforms. The user's personal information and inquiries can be accessed and presented on the internet.¹⁶

The metaverse is now experiencing a period of significant success. Perhaps individuals are fatigued by the constraints of reality and exhibit a greater inclination towards the virtual realm. Alternatively, it might be argued that technology conglomerates are actively seeking the next significant innovation. For various reasons, numerous companies are investing substantial amounts of capital, often in the range of hundreds of millions of dollars, towards the development of these innovative virtual environments. Consequently, this will result in the emergence of several novel technological employment opportunities in the forthcoming years. The Metaverse can be described as a cosmos that exists beyond our physical reality, characterized by its permanent and multi-user environment. It seamlessly integrates elements of both the physical world and the digital virtual realm.¹⁷ The phenomenon under consideration is predicated upon the confluence of technological advancements that facilitate the

¹⁴ Russell Belk, Mariam Humayun, and Myriam Brouard, 'Money, Possessions, and Ownership in the Metaverse: NFTs, Cryptocurrencies, Web3 and Wild Markets', *Journal of Business Research*, 153, August (2022), 198–205 <<https://doi.org/10.1016/j.jbusres.2022.08.031>>.

¹⁵ Horst Treiblmaier, Abderahman Rejeb, and Wafaa A H Ahmed, 'Chapter 8 - Blockchain Technologies in the Digital Supply Chain', ed. by Bart L MacCarthy and Dmitry B T - *The Digital Supply Chain* Ivanov (Elsevier, 2022), pp. 127–44 <<https://doi.org/https://doi.org/10.1016/B978-0-323-91614-1.00008-3>>.

¹⁶ Runhong Hu and others, 'Applying Augmented Reality (AR) Technologies in Theatrical Performances in Theme Parks: A Transcendent Experience Perspective', *Tourism Management Perspectives*, 40 (2021), 100889 <<https://doi.org/https://doi.org/10.1016/j.tmp.2021.100889>>.

¹⁷ Wenru Zhao, Liping Su, and Fengju Dou, 'Designing Virtual Reality Based 3D Modeling and Interaction Technologies for Museums', *Heliyon*, 9.6 (2023), e16486 <<https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e16486>>.

engagement of many senses in the interaction with virtual environments, digital entities, and individuals, exemplified by virtual reality (VR) and augmented reality (AR). The Metaverse can be described as a networked immersive environment that operates within a permanent multi-user platform, functioning as a linked social network. This technology facilitates effective user communication in real-time and allows for dynamic engagement with digital objects. The metaverse is transitioning from a concept in science fiction to an impending reality due to the rapid progress made in emerging technologies such as augmented reality, artificial intelligence, and blockchain.¹⁸

The metaverse represents a digital environment that facilitates social interaction, communication, collaboration, as well as the exchange and ownership of virtual assets. The metaverse, as delineated by multiple definitions, encompasses a virtual realm comprising interconnected computer-based environments, hence denoting a collective word for these virtual worlds. The interactions taking place within the metaverse are expected to yield substantial quantities of data pertaining to individual behaviors and user identities.¹⁹ The rapid progress of information and communication technologies has rendered privacy maintenance increasingly susceptible, resulting in a heightened risk of inadvertent data disclosure. The dissemination of personal data through the internet is highly probable. Indonesia possesses a single legislation, specifically the Information and Electronic Transactions (ITE) Law, that serves as the standard and legal framework for safeguarding personal data disseminated over the internet. However, it is evident that this measure alone does not suffice to ensure robust security assurances.

Indonesia encounters challenges pertaining to the safeguarding of personal data, an issue that has persisted over time inside the nation. Based on data collected from a study conducted two years ago, a significant number of incidents involving undetected breaches of public data have been observed. The aforementioned instances pertain to the disclosure of data pertaining to 297 million participants of BPJS in May 2022. In July 2021, a breach occurred resulting in the unauthorized disclosure of customer data belonging to two million individuals associated with BRI Life. In the preceding year, specifically in 2020, instances of data breaches were once again seen. These included the compromise of ninety-one million users' data from the Tokopedia platform in May 2020, as well as the exposure of 1.2 million bhinneka.com users' data and 2.3 million voter records from the General Election Commission (KPU). Furthermore, it was reported in June 2020 that a substantial number of around 230,000 Covid-19 patient records in Indonesia were illicitly disclosed and subsequently traded. Another instance is the existence of a hacker, identified by the account name "bjorka," who has demonstrated their capability to breach the confidentiality of government data, thereby exposing the personal information of

¹⁸ Le Yi Koh and others, 'Willingness to Participate in Virtual Reality Technologies: Public Adoption and Policy Perspectives for Marine Conservation', *Journal of Environmental Management*, 334 (2023), 117480 <<https://doi.org/https://doi.org/10.1016/j.jenvman.2023.117480>>.

¹⁹ Amin Gasmi and Rachid Benlamri, 'Chapter 4 - Augmented Reality, Virtual Reality and New Age Technologies Demand Escalates amid COVID-19', ed. by Victor Chang and others (Academic Press, 2022), pp. 89–111 <<https://doi.org/https://doi.org/10.1016/B978-0-323-90054-6.00005-2>>.

state officials.

Alinea IV of the Preamble of the 1945 Constitution of the Republic of Indonesia (UUD 1945) articulates the principle of advancing the general welfare, indicating Indonesia's commitment to a welfare state. This implies that the state bears the responsibility of enhancing the well-being of its citizens. The welfare state is commonly referred to as the material or broad sense of the rule of law, alongside the formal sense (in a narrower context) known as the *rechtsstaat*, as originally coined by Azhari. The *rechtsstaat* concept portrays the state as a night watchman, solely responsible for maintaining order and ensuring security. The state intervenes solely in instances where there is a disruption to order and security. However, the term "*rechtsstaat*" is employed to denote the notion of state law in a formal manner.

The concept of the rule of law, as articulated by Friedrich Julius Stahl, encompasses four essential components: safeguarding human rights, implementing a system of checks and balances, establishing a regulatory framework for governance, and ensuring an independent judiciary.²⁰ The concept of law underwent a subsequent transformation from its formal interpretation to its material interpretation, wherein the state's responsibility in facilitating the collective welfare expanded. In subsequent advancements, the notion of *rechtsstaat* has been employed in conjunction with the welfare state, sometimes known as *verzorgingstaat*. In the context of Indonesia, the concept of *rechtsstaat* is not construed in a literal sense as a state governed by law. Rather, *rechtsstaat* is comprehended as a state founded upon the principles of law, as articulated in Article 1 Paragraph (3) of the 1945 Constitution, which declares that "The State of Indonesia is a state of law." Hence, it is imperative to comprehend the constituent aspects and underlying aim of the Indonesian *rechtsstaat* before attempting to classify it within the framework of the Continental European idea of *rechtsstaat* or equating it with the Anglo-Saxon notion of the rule of law.²¹

According to Jimly Asshiddiqie, the main principles of a modern legal state, particularly in Indonesia, are based on Pancasila and the 1945 Constitution. These principles encompass twelve key elements, which are as follows: (1) the rule of law; (2) equality under the law; (3) the principle of legality; (4) the limitation of power; (5) the existence of independent executive organs; (6) a judiciary that is free and impartial; (7) the establishment of a state administrative court; (8) the protection of human rights; (9) adherence to democratic principles; (10) functioning as a means to achieve state

²⁰ Elisa Ortega Velázquez, 'Minority Rights for Immigrants: From Multiculturalism to Civic Participation', *Mexican Law Review*, 10.1 (2017), 103–26 <<https://doi.org/https://doi.org/10.22201/ij.24485306e.2017.19.11385>>.

²¹ Rian Saputra, M Zaid, and Silaas Oghenemaro, 'The Court Online Content Moderation : A Constitutional Framework', *Journal of Human Rights, Culture and Legal System*, 2.3 (2022), 139–48 <<https://doi.org/10.53955/jhcls.v2i3.54>>.

objectives; and (12) transparency and social control.²² The Constitutional Court is an institution that upholds the protection of human rights, exhibits a democratic nature, serves as a mechanism for achieving state objectives, and operates with transparency and social accountability. One of the fundamental principles encompassed within the concept of the rule of law pertains to safeguarding human rights. This principle is rooted in the belief that human beings, as entities brought into existence by a supreme divine being, are entrusted with the responsibility of governing and preserving the universe. In fulfilling this duty, humans are bestowed with certain inherent entitlements by their creator, which serve to uphold their dignity and foster a harmonious environment. The Constitution provides safeguards for the protection of human rights, ensuring their enforcement through a just and equitable legal procedure. The dissemination of information regarding the safeguarding of human rights is extensively propagated with the aim of fostering reverence for and safeguarding of human rights as a crucial characteristic of a democratic rule of law.²³

Indonesia is a nation characterized by the rule of law, wherein the authority is bestowed upon the populace and implemented in accordance with the Constitution, known as the UUD. The fundamental principle of popular sovereignty is to establish a democratic framework within the governance of a nation and its constituent states. Every individual, from the moment of their birth, possesses inherent rights and corresponding responsibilities that are fundamental and unrestricted in nature. The preservation and execution of governmental authority should not diminish the significance of individual liberties and human rights. Hence, the safeguarding and reverence for human rights constitute a fundamental cornerstone of the rule of law inside any given nation.²⁴ If a state purposefully neglects or violates human rights, resulting in insurmountable suffering that cannot be justly resolved, then it is inappropriate to refer to this state as a true embodiment of the rule of law. Based on the aforementioned description, it is imperative for the Indonesian government to prioritize the reformation of legislation pertaining to the safeguarding of personal data. Legal reform in Indonesia encompasses more than mere modifications, additions, corrections, reviews, replacements, or deletions. The Indonesian government has implemented legal reforms to enhance the safeguarding of personal data through the enactment of Law Number 27 of 2022, which focuses on the protection of personal data.²⁵

The objective of national legal reform is to establish legislation that reflects the

²² Pujiyono Suwadi and others, 'Legal Comparison of the Use of Telemedicine between Indonesia and the United States', *International Journal of Human Rights in Healthcare*, ahead-of-p.ahead-of-print (2022) <<https://doi.org/10.1108/IJHRH-04-2022-0032>>.

²³ Rian Saputra and Silaas Oghenemaro Emovwodo, 'Indonesia as Legal Welfare State: The Policy of Indonesian National Economic Law', *Journal of Human Rights, Culture and Legal System*, 2.1 (2022), 1–13 <<https://doi.org/10.53955/jhcls.v2i1.21>>.

²⁴ Yogi Zul Fadhlhi, 'Kedudukan Kelompok Minoritas Dalam Perspektif HaM Dan Perlindungan Hukumnya Di Indonesia', *Jurnal Konstitusi*, 11.2 (2016), 352 <<https://doi.org/10.31078/jk1128>>.

²⁵ Prabowo, Wibawa, and Azmi.

collective desires and preferences of the community. Legal reform refers to the systematic evaluation and modification of existing legal norms with the aim of enhancing the administration of justice and safeguarding the legal rights and interests of the society.²⁶ Based on the aforementioned description, it is imperative for the Indonesian government to prioritize the reformation of legislation pertaining to the protection of personal data. Legal reform, sometimes referred to as legal reform in the context of Indonesia, encompasses more than mere modifications, additions, corrections, reviews, replacements, or deletions. The Indonesian government has implemented legal reforms in the realm of personal data protection by the enactment of Law No. 27 of 2022. Based on the aforementioned events, it is evident that the State of Indonesia is currently facing challenges pertaining to the safeguarding of personal data. This issue is not novel to Indonesia, as previously discussed. In light of the aforementioned descriptions, the author proposes the title "Human Rights and Personal Data Protection in the Context of the Rule of Law within the Virtual Metaverse Technology Sphere" for this paper. The title formula serves as a means of expressing the issues examined in this research, specifically the interconnection between human rights, judicial reviews, and the Personal Data Protection Law within the context of the rule of law in the realm of metaverse virtual technology.

2. Research Method

This study employs normative research methodologies. In essence, every legal study is required to adhere to normative principles. The distinction is in the utilization of legal resources and methodologies.²⁷ The methodology employed in this study is presented in the form of an approach. The proposed methodology is a conceptual approach, which involves the examination of legal doctrines and theoretical perspectives within the field of legal science.²⁸ This paper utilizes concepts and theories related to crypto assets and money laundering offenses as a conceptual framework for analyzing and addressing the issues presented. Additionally, a statutory approach is employed, involving a comprehensive examination of pertinent laws and regulations pertaining to the legal matter under analysis.

²⁶ M. Guntur Hamzah and Wilma Silalahi, 'Constitutionality of the Former Ex-Convict as Election Participants of Regional Heads', *Proceedings of the 1st Paris Van Java International Seminar on Health, Economics, Social Science and Humanities (PVJ-ISHESSH 2020)*, 535 (2021), 538–44 <<https://doi.org/10.2991/assehr.k.210304.121>>.

²⁷ Jamal Wiwoho and others, 'Islamic Crypto Assets and Regulatory Framework: Evidence from Indonesia and Global Approaches', *International Journal of Law and Management*, 2023 <<https://doi.org/10.1108/IJLMA-03-2023-0051>>.

²⁸ Syafril Hendrik Hutabarat, Hartiwiningsih, and Pujiyono Suwadi, 'RECONSTRUCTING THE AUTHORITIES OF INVESTIGATORS OF THE FINANCIAL SERVICE AUTHORITY', *Journal of Law and Sustainable Development*, 11.2 (2023) <<https://doi.org/10.55908/sdgs.v11i2.323>>.

3. Results and Discussion

Metaverse Digital Technologies

One can see a simulated environment wherein individuals have the ability to engage, conduct business ventures, engage in employment, and engage in commercial transactions with others from the convenience of their residences. The term "metaverse" is currently used to refer to the reality in question. Since its rebranding to Meta in October 2021, Facebook's transformation has sparked widespread global discourse on the metaverse, the conceptual framework that underpins its new identity.²⁹ Meta, formerly known as Facebook, has just made a public declaration of its intention to allocate a substantial sum of \$10 billion towards the development of metaverse technology and the exploration of other prospects in the next years. The significance of the metaverse for businesses and entrepreneurs is in the provision of a novel avenue through which they can engage in communication, transactions, and collaborations with people across global locations, transcending physical boundaries. Additionally, it facilitates the broader virtual economy, wherein users can engage in many activities, such as establishing real-world businesses. The Metaverse is anticipated to emerge as a novel marketing platform in the future, enabling businesses and entrepreneurs to showcase and animate various brands within a three-dimensional interactive digital environment, during the era of the digital economy. The concept of the metaverse was initially developed by Neal Stephenson in his fictitious literary work titled *Snow Crash*. This research investigates the changing concepts associated with the Metaverse.³⁰

The concept of the "Metaverse" has garnered considerable attention from the general public as a potential solution to address various challenges stemming from the Covid-2019 pandemic. These challenges have had a profound negative impact, particularly on the economic and business sectors. The concept of the metaverse is employed by certain individuals as a means to address the restricted in-person interactions mandated by governmental authorities, with the aim of mitigating the risk of viral transmission. The implementation of regulations that impose restrictions on physical human activity and movement has multifaceted implications for society across domains including education, social interactions, and commercial endeavors. The global pandemic resulted in a notable economic downturn in various countries, with Indonesia being particularly affected.³¹

Certain inhibiting variables may not be applicable in the event that individuals engage in a multitude of activities within the metaverse. Individuals have the ability to engage in social interactions and partake in various activities both online and in real time within their everyday lives. The metaverse is poised for expansion, facilitating the development of virtual environments that enable users to engage in interactions across multiple dimensions beyond

²⁹ Yijun Tian, 'Intellectual Property (IP) Protection versus IP Abuses: The Recent Development of Chinese IP Abuse Rules and Recommendations for Foreign Technology-Driven Companies', *Computer Law & Security Review*, 25.4 (2009), 352–66 <<https://doi.org/https://doi.org/10.1016/j.clsr.2009.05.005>>.

³⁰ Nobuya Fukugawa, 'Effects of Incorporating Public Innovation Intermediaries on Technology Transfer Performance: Evidence from Patent Licensing of Japan's Kohsetsushi', *Heliyon*, 8.10 (2022), e11139 <<https://doi.org/10.1016/j.heliyon.2022.e11139>>.

³¹ Treiblmaier, Rejeb, and Ahmed.

the limitations of existing technology. According to Russel (2021), users of the Metaverse would experience complete immersion in both physical and digital spaces, as opposed to merely observing digital information. The Metaverse is anticipated to expand and establish virtual environments wherein people engage in interactions that surpass the limitations of present technological capabilities, operating across multiple dimensions. Instead of passively consuming digital content, users of the Metaverse will experience complete immersion in both physical and digital realms.

According to Efraim Wood, it might be argued that the metaverse represents the upcoming frontier for online interaction, comparable to the transformative impact of social media on the online marketing landscape. Marketing communications experts should give careful consideration to it. This phenomenon broadens the scope of business concepts that are now constrained by prevailing circumstances. The metaverse encompasses a diverse array of activities, including but not limited to video conferencing, cryptocurrencies, email, virtual reality, social networking, live streaming, machine intelligence, blockchain, and machine vision. The weather is really hot today. I can't stand it.") The current weather conditionsThe metaverse represents a forthcoming realm of digital interaction, much to how social media has revolutionized the landscape of online marketing.³²

Marketing communication specialists should prioritize their attention towards it. The utilization of emerging technologies has the capacity to enhance the possibilities of company concepts that are currently constrained by the limitations of our present circumstances. The metaverse encompasses a diverse array of activities, including but not limited to video conferencing, cryptocurrencies, email, virtual reality, social networking, live streaming, machine intelligence, blockchain, and machine vision. The term "metaverse" denotes a collectively experienced digital realm, akin to interactive gaming platforms such as Second Life or Pokémon Go. The metaverse refers to a verisimilar tridimensional milieu whereby individuals have the ability to engage in real-time exploration and interaction with one another. The metaverse can be defined as a virtual environment that offers individuals the ability to navigate around digital space and engage in interactions with other users. It possesses numerous advantageous qualities that make it conducive for the growth and expansion of enterprises. The Metaverse refers to a set of technological advancements that facilitate human interaction within a virtual area often known as cyberspace. The prevalent technologies typically encompass augmented reality, virtual reality, and video. The term "metaverse" encompasses a digital realm that may be accessed by many technological means, including computers, smart devices, augmented reality, and virtual reality headsets. The principles of the metaverse emphasize the significance of interaction and engagement, which enable users to experience complete immersion in the online environment supported by metaverse technology.³³

The Metaverse refers to a communal virtual open environment and device that integrates both the physical and digital realms, while remaining independent of any specific vendor. Within that virtual environment, individuals have the ability to engage in social interactions

³² Rizal Sukma Aliyudin, 'Peran Financial Technology Dalam Meningkatkan Penerimaan Pajak Di Indonesia', *Jurnal Akuntansi Keuangan Dan Sistem Informasi*, 1.1 (2020), 56–67.

³³ Ronald W Staudt, 'All the Wild Possibilities: Technology That Attacks Barriers to Access to Justice', *Loyola of Los Angeles Law Review*, 42 (2009), 101–29.

with one another by means of three-dimensional representations of themselves known as avatars. Furthermore, individuals engage in the production and acquisition of digital assets, frequently in the form of non-fungible tokens (NFTs). The concept of the Metaverse involves the integration of virtual and tangible realms in order to generate a novel entity. The utilization of technological gear such as virtual reality headsets or augmented reality applications enables individuals to engage with a novel reality that is both immersive and boundless, presenting a three-dimensional experience. The metaverse is characterized by its unlimited nature and absence of physical constraints often associated with the physical world. This implies that the metaverse has the capacity to exhibit distinct visual and functional characteristics compared to conventional environments. The metaverse's online nature enables individuals to engage with it within various social situations. The reality in question is fundamentally constrained solely by the boundaries of human imagination. The concept of an embodied internet entails active participation within the online experience, as opposed to passive observation. The term "metaverse" is commonly used to refer to this concept.³⁴

Based on the aforementioned definitions of the metaverse, the author reaches the deduction that the metaverse entails a fusion or cooperative integration of the tangible realm and the digital realm, facilitated by diverse technologies and software. Furthermore, the metaverse is posited as a parallel existence to our current physical world. There exists a multitude of activities that people can engage in within the metaverse. In a broader context, it is noteworthy that the behavioral patterns exhibited by individuals in physical reality can also be observed within the metaverse. Currently, due to the novelty of the metaverse, particularly in Indonesia and other developing nations, significant adaptation is still necessary. Hence, the prevailing lack of recognition among the general populace might be attributed to the nascent paradigm shift in lifestyle within the metaverse.³⁵

The correlation between the preservation of personal data in Metaverse virtual technology and human rights

The concept of the Metaverse has been suggested as a collaborative virtual environment facilitated by a multitude of emerging technologies. Among the various technological advancements, artificial intelligence (AI) has demonstrated its significance in augmenting immersive experiences and facilitating the development of virtual agents with human-like cognitive abilities. The concept of the metaverse has garnered significant attention and discourse across multiple domains. The metaverse can be defined as a digital platform that facilitates social interactions and provides immersive experiences through the use of digital avatars. The objective is to integrate several components, including social, augmented reality, virtual reality, and cryptocurrency sectors, in order to facilitate multidimensional interactions. This integration is supported by cloud computing, artificial intelligence, and

³⁴ Giovani Rawung, Johny R.E Tampi, and Olivia F Walangitan, 'Analisis Financial Technology (FINTECH) Dalam Transaksi Pembayaran Menggunakan Pendekatan Adaptive Structure Theory Pada Usaha Kecil Di Manado', *Productivity*, 2.7 (2021), 5–24.

³⁵ Malkar Vinod Ramchandra and others, 'Assessment of the Impact of Blockchain Technology in the Banking Industry', *Materials Today: Proceedings*, 56 (2022), 2221–26 <<https://doi.org/10.1016/j.matpr.2021.11.554>>.

crypto platforms.³⁶

Within the realm of the metaverse, individuals possess the ability to construct a diverse array of establishments, encompassing residences, commercial centers, corporate spaces, cultural institutions, and more. Consequently, it is not unexpected that the metaverse has garnered the moniker of a virtual secondary existence, wherein these entities can be accessible through the utilization of virtual reality (VR) or augmented reality (AR) technologies. In the realm of economic activity within the metaverse, the dynamics closely resemble those observed in the physical world. Specifically, when users possess assets that are highly sought after by other users, the market value of those assets will consequently rise significantly. The Metaverse encompasses a range of functionalities that enable individuals to engage in direct interactions, albeit not within the confines of physical proximity. It facilitates collaboration, learning, and creativity akin to real-world experiences. Additionally, commercial transactions, such as buying and selling, are prevalent within this virtual realm. It is important to note that these interactions necessitate comprehensive and extensive data pertaining to personal habits and user identity. The utilization of technology will give rise to two prevailing outcomes, specifically difficulties and opportunities, akin to a double-edged sword with both negative and positive aspects. However, the prevalence of negative consequences will result in the emergence of significant new legal issues.³⁷

Numerous facets of literature centered around the metaverse have engendered a narrative that examines the advantages and difficulties associated with it. However, certain scholars have underscored the manifold adverse consequences arising from society's embrace of the metaverse, particularly its effects on specific segments of the populace. There are numerous instances that have been extensively referenced in academic literature, which highlight the prevalence of abusive conduct, bullying, the dissemination of explicit sexual material, racist behavior, the expression of violent threats, the presence of child pornography, and the development of addiction to realistic simulations inside VR Chat platforms.³⁸ The Metaverse presents various difficulties pertaining to security, safety, and privacy. The escalation of privacy, safety, and security apprehensions is anticipated due to the growing interconnectedness of devices and individuals, along with the accumulation of extensive data. This trend is expected to expedite the proliferation of the metaverse, approaching a rate comparable to that of the physical world. The pervasive utilization of social media and online gaming has given rise to a host of challenges, which are anticipated to extend to the metaverse on a significant magnitude. The incorporation of an additional dimension and the facilitation of near real-time interactions within this virtual realm may potentially engender a multitude of mental health concerns in the physical world. Moreover, this convergence of realities has the potential to erode the boundaries between the tangible and the imaginary domains. The metaverse holds significant potential for fostering positive opportunities within the realms of business, economy, and society. Nevertheless, the potential hazards linked to the juxtaposition of privacy concerns and the inherent transparency and openness seen in virtual

³⁶ Tao Yun, 'Review of Science and Technology Innovation Policies in Major Innovative-Oriented Countries in Response to the COVID-19 Pandemic', *Biosafety and Health*, 5.1 (2023), 12 <<https://doi.org/10.1016/j.bsheal.2022.12.001>>.

³⁷ Hu and others.

³⁸ Zhao, Su, and Dou.

communities are on the rise. The possibility exists for the emergence of legal concerns pertaining to the handling of personal data.³⁹

According to Eric Schmidt, the former CEO of Google, the advent of metaverse technology is poised to present novel challenges for humanity. This is primarily due to the metaverse's inclination towards prioritizing the virtual realm, potentially leading to a neglect of the physical world. Consequently, the implementation of metaverse technology in different countries will likely necessitate the establishment of new regulatory frameworks. As a result, countries embracing metaverse technology must be adequately prepared to address the associated risks that may arise. According to Eric Schmidt, it is postulated that individuals would increasingly allocate their time within the metaverse realm in the future. However, it is regrettable that thus far, no entity, including governmental bodies, has taken the initiative to establish regulatory frameworks for the metaverse. In addition to its other implications, the metaverse also presents a potential cybersecurity concern as users are required to authenticate their comprehensive data. The consequences of data leaks on individuals.⁴⁰

Naturally, this phenomenon can elicit apprehensions regarding the potential disclosure of personal data among users. Furthermore, it is worth noting that within Indonesia, a number of companies have successfully integrated metaverse technology into their operations. These include Telkom metaverse ecosystem, PT WIR Group, Bank BRI (which plans to collaborate with PT WIR Group), and the renowned artist Raffi Ahmad's platform, Ransverse (accessible at <https://ransverse.vcgamers.com>). Notably, Ransverse conducted an initial trial period, known as Initial Landing Offering (ILO), on May 30, 2022. Remarkably, within a mere 35 minutes, a total of 546 lands in Ransverse were sold out, setting a new record. This indicates that there is a growing desire among the Indonesian population, particularly among the younger generation, in embracing the metaverse period.⁴¹

In the era of the metaverse, nearly every aspect of social, economic, political, and cultural life necessitates the incorporation of activities associated with the utilization and retrieval of personal data. The advent of the metaverse period presents unique challenges and necessitates the safeguarding of personal data due to the myriad risks that individuals encounter, particularly those with less technological literacy. Simultaneously, the extensive utilization of big data presents significant obstacles in safeguarding personal data protection and privacy. The process of gathering and transmitting individualized information inherently leads to the exposure of said data, hence posing possible risks to personal safety. Hence, it is imperative to prioritize the safeguarding of rights pertaining to the utilization and exchange of personal data.⁴² The establishment of effective governance mechanisms for safeguarding personal data is often regarded as a means to enhance public confidence in the government's

³⁹ Koh and others.

⁴⁰ George H Currey and others, 'Police Research Technology: Functional Relations between Juvenile Citations and Criminal Offenses', *Journal of Criminal Justice*, 11.1 (1983), 15–26 <[https://doi.org/https://doi.org/10.1016/0047-2352\(83\)90094-6](https://doi.org/https://doi.org/10.1016/0047-2352(83)90094-6)>.

⁴¹ Hidemichi Fujii and Shunsuke Managi, 'Trends and Priority Shifts in Artificial Intelligence Technology Invention: A Global Patent Analysis', *Economic Analysis and Policy*, 58.2018 (2018), 60–69 <<https://doi.org/10.1016/j.eap.2017.12.006>>.

⁴² Marek Jemala, 'Systemic Technology Innovation Management and Analysis of Other Forms of IP Protection', *International Journal of Innovation Studies*, 6.4 (2022), 238–58 <<https://doi.org/https://doi.org/10.1016/j.ijis.2022.08.001>>.

commitment to fulfilling its duty of safeguarding its populace. Trust is established through the implementation of both proactive and reactive measures in governance for protection. The safeguarding of personal data is achieved through the establishment of robust legislative frameworks that ensure the security of individuals' information and facilitate the effective enforcement of personal data protection measures. The Indonesian government bears the responsibility of data protection governance; nevertheless, this does not absolve the community and industrial sectors from their role in safeguarding personal data. The community has the ability to effectively manage its personal data through the implementation of measures aimed at preventing the unauthorized disclosure of such information. The lack of effective data governance can lead to the vulnerability of personal data, making it susceptible to unauthorized access and misuse.⁴³

The Metaverse is a technological concept that has been offered by Facebook, a prominent industry leader. It is worth noting that Facebook has faced criticism about its handling of personal data protection and cybersecurity.⁴⁴ The legal framework for the protection of personal data in Indonesia primarily derives from the rules outlined in the amended 1945 Constitution of the Republic of Indonesia. In Article 28G, Paragraph (1) of the 1945 Constitution of the Republic of Indonesia, it is stated that all individuals possess the entitlement to safeguard their own well-being, as well as that of their family, reputation, integrity, and property under their jurisdiction. Furthermore, individuals are granted the right to experience a feeling of security and protection against any form of intimidation or coercion that may impede the exercise of their fundamental human rights. In addition, the safeguarding of privacy and personal data of individuals is addressed by the International Covenant on Civil and Political Rights (ICCPR), which was ratified through Law No. 12 of 2005 pertaining to the ratification of the ICCPR. The preservation of the right to privacy of citizens is also ensured in accordance with the terms of Law No. 39 of 1999 on Human Rights.⁴⁵

Several nations have already implemented legislation pertaining to the protection of personal data. The Personal Information Protection Act of Japan was officially promulgated on May 23, 2003 and subsequently enforced on April 1, 2005. The modification to the Computer Processed Personal Data Protection Act of 1995 was passed by Taiwan's Legislative Yuan on April 27, 2010. The South Korean government implemented a comprehensive Personal Information Protection Act in March 2011. Malaysia has emerged as the frontrunner among ASEAN nations in Southeast Asia by enacting its own iteration of the Personal Data Protection Act on May 6, 2010. This legislation is set to be enforced as law starting from January 1, 2013. Furthermore, Indonesia has established regulations on the protection of personal data in the digital age through the Ministry of Communication and Information Technology (Kemkominfo). These regulations include Ministerial Regulation (Permen) No. 2 of 2016 on Personal Data Protection and Electronic Systems (Permenkominfo

⁴³ Gasmi and Benlamri.

⁴⁴ Dian Latifiani, 'Human Attitude And Technology: Analyzing A Legal Culture On Electronic Court System In Indonesia (Case Of Religious Court)', *Jils (Journal of Indonesian Legal Studies) Volume*, 6.1 (2021), 157–84 <<https://doi.org/doi.org/10.15294/jils.v6i1.44450>>.

⁴⁵ Mao Jun Xiang and Belengar Francis Maïnkade, 'The Human Rights-Based Approach to Sustainable Development: Lessons from Recent African Investment Treaty Practice', *Heliyon*, 9.8 (2023), e18578 <<https://doi.org/https://doi.org/10.1016/j.heliyon.2023.e18578>>.

20/2016), which came into effect in December 2016 in accordance with the requirements outlined in Government Regulation No. 82 of 2012 on the Implementation of Electronic Systems and Transactions.⁴⁶

Nevertheless, Indonesia has already established a legal framework for safeguarding personal data with the enactment of Law No. 27 of 2022. However, a significant concern arises as the implementation of this law is subject to dynamic changes. Hence, it may be argued that Indonesia exhibits a vested interest in the realm of personal data protection administration. The Indonesian government's prioritization of personal data protection governance is better suited to providing services to the Indonesian population. The government operates by employing the carefully chosen language of efficiency and adaptation, signifying that the utilization of data is connected to matters of operational execution and aims to enhance services and streamline management processes. The government acknowledges the presence of hazards and remains committed to gathering information pertaining to potential infringements on the privacy of Indonesian citizens. The legislation pertaining to the safeguarding of personal data privacy is implemented by ongoing enhancements to the objectives of the law, with the aim of providing improved governance and ensuring the protection of Indonesian residents.⁴⁷

The theory of development law posits a novel legal notion, wherein legislation is regarded as a tool for facilitating community development. In certain legal domains, such as cyberlaw, the principle of neutrality is upheld, meaning that spiritual, religious, and cultural considerations are not taken into account. However, there are other areas of law, like marriage and inheritance law, where neutrality is not maintained, as these laws do consider such aspects. The theory of development law can serve as a valuable tool for community revitalization and the establishment of effective legislation that aligns with societal norms and delivers the intended advantages. The concept of law as a mechanism for renewal is predicated on the notion that the presence of structure or organization in endeavors aimed at renewal or progress is highly valued, and may even be regarded as inherently necessary. The concept of law, referring to rules and legal laws, can serve as a regulatory mechanism or a facilitator of progress by guiding and shaping human actions towards desired developmental or transformative objectives.

The proliferation of legal theory of development might be attributed to the underlying premise that the law may not only fail to facilitate societal changes, but could also impede them (thus not catalyzing revolutions as legal practitioners). The legal theory of development in Indonesia has gained significant traction and breadth due to the prominent role of legislation in the country's legal reform process. While jurisprudence does contribute to ongoing legal reform, the evolution of legislation in line with contemporary needs has assumed paramount importance.⁴⁸ The matter of safeguarding personal data in the metaverse realm is addressed through the implementation of legislation, which plays a crucial role in enhancing the fundamental rights of Indonesian individuals concerning privacy and self-preservation, ensuring their adequate protection. The PDP Law offers sufficient

⁴⁶ Prabowo, Wibawa, and Azmi.

⁴⁷ Prabowo, Wibawa, and Azmi.

⁴⁸ M. Syafi'ie, 'Instrumentasi Hukum Ham, Pembentukan Lembaga Perlindungan Ham Di Indonesia Dan Peran Mahkamah Konstitusi', *Jurnal Konstitusi*, 9.4 (2016), 681 <<https://doi.org/10.31078/jk945>>.

safeguards for the protection of personal data, thereby instilling individuals with the assurance to provide their personal information without fear of its exploitation.

The PDP Law encompasses legal provisions that enable data controllers, data processors, and other relevant entities engaged in data processing activities to adapt their practices in accordance with the requirements set forth in the PDP Law. Critical data protection solutions are dependent on various technologies, including but not limited to data loss prevention (DLP), storage systems with integrated data protection capabilities, firewalls, encryption mechanisms, data mapping techniques, and endpoint protection measures. Article 4 of the Personal Data Protection (PDP) Law has delineated the many categories of personal data. The delineations regarding the categories of personal data are highly explicit; nonetheless, the practical approaches to handling these two distinct forms of personal data are evidently divergent. The clarity of this clause is lacking, and it would be advisable to consider the implementation of a government regulation to govern the handling of both forms of personal data. The provisions outlined in Article 16 elucidate the procedures for handling personal data. However, it is necessary to establish a distinction between the processing of specific personal data and general personal data. In addition to commonly collected personal information, it is crucial to provide particular attention to special categories of personal data, which might be deemed highly sensitive. These specific types of data hold significant relevance and hence necessitate a heightened level of safeguarding.⁴⁹

The PDP Law necessitates the establishment of governmental laws that will facilitate the comprehensive realization of personal data protection as outlined in the PDP Law. This is particularly crucial in the context of safeguarding personal data in the contemporary metaverse era. The safeguarding of personal data is of utmost significance due to the rapid advancement of technology, which has facilitated individuals' access to worldwide networks and the instantaneous availability of personal information on a global scale. The act of establishing a connection between a machine and the internet in isolation can potentially expose personal data to various risks. Hence, it is imperative for the government to establish appropriate measures to safeguard personal data in the contemporary period. The enhancement of the PDP Law in Indonesia could be achieved by the implementation of an early and ongoing prevention mechanism. This practice is implemented with the aim of enhancing and perpetually advancing capabilities pertaining to the detection and mitigation of personal data breaches. Establish stringent regulations for the cybersecurity protocols of every collaborating vendor, formulate fundamental principles and technical standards to guarantee a uniform level of cybersecurity across all participating entities, devise an implementable national strategy for cybersecurity, enhance procedures and regulations pertaining to supply chain infrastructure, and foster collaboration between private and public sectors to facilitate mutual exchange and bolster cybersecurity infrastructure capabilities.

The implementation of Personal Data Protection (PDP) is essential in ensuring the adherence to the concepts of Data Protection By Design and By Default. This principle encompasses the incorporation of privacy by design principles that were previously established. Data Protection By Design refers to the practice of companies incorporating suitable technical and organizational measures during the initial stages of designing data

⁴⁹ Stuart Yeh, 'The Electronic Monitoring Paradigm: A Proposal for Transforming Criminal Justice in the USA', *Laws*, 4.1 (2015), 60–81 <<https://doi.org/10.3390/laws4010060>>.

processing systems. This ensures that the necessary safeguards are integrated into the data processing activities, thereby meeting regulatory requirements and safeguarding the rights of individuals whose data is being processed. In the context of data protection, the principle of Data Protection By Default necessitates that organizations take appropriate measures to safeguard individuals' personal data, ensuring that it is treated with utmost privacy protection. This entails that personal data should be accessible just for defined purposes and should not be readily accessible or known to unauthorized individuals. Therefore, it is crucial to consider the regulation of data subjects' rights as an additional significant aspect.

4. Conclusion

Based on the aforementioned discourse, it can be inferred that there exists a close association between the rule of law, human rights, and personal data protection, as evidenced by the theoretical framework that draws parallels between legal philosophy, legal theory, legal dogmatics, and positive law. The safeguarding of personal data in Indonesia is an imperative requirement, particularly in light of the escalating number of incidents and the advancements in the information technology sector. The significance of metaverse technology should not be underestimated, thereby necessitating a thorough legislative reform to address the associated difficulties. The enactment of the Personal Data Protection (PDP) Law represents the initial measure taken by the government to establish a framework for the administration of personal data safeguarding. The active participation of all stakeholders, particularly those within the digital economy industry, is essential in the formulation and implementation of rules. Furthermore, it is imperative to adhere to the principles of Data Protection By Design and By Default. The PDP Law encompasses various significant provisions that can be utilized by the Indonesian government to enforce personal data protection measures and impose penal consequences on individuals who contravene the regulations stipulated within the PDP Law. The PDP Law serves as a legal framework that has jurisdiction not just at the national level but also extends to international contexts, particularly within the contemporary metaverse realm.

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