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Legal Construction of the Use of Big Data to Support Sustainable Innovation in the Digital Era

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Abstract: The legal framework governing the use of big data has become a crucial issue in this digital era. One notable advantage of Big Data and Computational Technology is the enhanced ease of storing and retrieving records. With platforms such as social media, individuals are storing a greater volume of data than ever before. The likelihood of having physical copies of old photographs has diminished or they have been discarded, yet numerous individuals have already shared them on social media platforms. This research employs qualitative methods with data collection techniques using library research. In Indonesia, there are currently no specific regulations governing the use of Big Data. However, the Principles of the Indonesian Digital Economy have recognized the need for data protection as a crucial asset. It indicates that the legal construction regarding Big Data usage is an urgent issue. In the case of Big Data, platforms or infrastructures that store, manage, and provide access to large data can be considered Essential Facilities. The main challenge in regulating Big Data lies in the technical complexity and cross-border nature of the data. Limitations of national jurisdiction and the lack of a comprehensive international framework make it difficult to regulate data ownership and access effectively.

Keyword: Big Data; Legal Reconstruction; Digital Era.

INTRODUCTION

Trapped in an era where digital technology evolves rapidly, technological advancements and innovations have become the primary foundation across all aspects of life, including law enforcement. The digital revolution has opened doors to remarkable progress in how we access, analyze, and process relevant information within the justice system. The rapid technological development and innovation have had a significant impact on various aspects of human life, including in the legal domain. In this digital era, the utilization of technology has become an inseparable part of law enforcement efforts. However, rapid

technological advancements often outpace the development of positive law, namely the legal rules governing the use of technology.

In his work titled "Code and Other Laws of Cyberspace," Professor Larry Lessig highlights the fundamental idea that computer code plays a crucial role in shaping legal regulations and behavior in the digital realm. He emphasizes the importance of understanding how technology controls aspects of our lives and its impact on justice in that context. On the other hand, Professor Richard Susskind, a leading expert in technology and law enforcement, has highlighted the dramatic changes brought about by technology in the practice and theory of law enforcement. His concepts of "Online Courts" and "The End of Lawyers?" have sparked important discussions about the future of law enforcement. The increasing innovation in technology has heightened complexity, costs, and risks as consequences of changes in business processes, high competitive pressures, and rapid and drastic technological developments. Technology now serves as a crucial resource and is a subsystem of organizations. Therefore, technology has significant implications for competitiveness and long-term profitability. To remain relevant and competitive in the market, companies must pay close attention and leverage technological opportunities to support business strategies and improve operations, and services. The success of an organization or company is often determined by its ability to respond to and adapt to ongoing technological innovations.[1]

In the ever-growing digital era, the importance of legal construction regarding the use of Big Data to support sustainable innovation is increasingly prominent. Big Data has become a valuable source of information for companies in various sectors. Even though there are no regulations that specifically regulate Big Data ownership in Indonesia, the need for legal protection of data as an important asset has been recognized through the Digital Economy Principles issued by the government. It shows the urgency to regulate business competition law regarding ownership and access to Big Data in Indonesia.[2]

Big Data, which is a large collection of valuable data, has become a strategic asset for companies in making smart business decisions and gaining competitive advantages. On the other hand, the Essential Facility, as an important infrastructure for access and utilization of Big Data, plays a crucial role in ensuring healthy and fair competition in the market.[3] Currently, there are no regulations that specifically regulate the use of Big Data in Indonesia. However, awareness of the need for legal protection of data assets is increasing. The Digital Economy Principles issued by the Indonesian government emphasize the importance of protecting data as a vital aspect of the digital economy. Therefore, the need for strict regulations regarding the use and access of Big Data in the context of legal construction in Indonesia is increasingly gaining great urgency.

In the context of Big Data, the platform or infrastructure tasked with storing, managing, and providing access to big data is often considered an Essential Facility that has a significant impact on business competition in the market. However, regulating Big Data ownership faces challenges of technical complexity as well as jurisdictional differences that cross national borders. Limitations in the broad national and international legal framework make regulation of data ownership and access complex and challenging. One of the main problems in regulating ownership of Big Data is the technical complexity and cross-border nature of the data. Limited national jurisdiction and the lack of a comprehensive international framework are obstacles to effectively regulating data use and access in Indonesia.[4]

METHOD

This research uses qualitative methods that strive to gain an in-depth understanding of the Legal Construction of the Use of Big Data to Support Sustainable Innovation in the Digital Era. Qualitative methods can also provide a detailed and comprehensive picture of the concepts related to this research.[5] The data collection technique used in this research is

library research. The technique is conducted by collecting and analyzing literature related to the topic such as books, journals, articles, and other related documents. It was chosen because it allows researchers to gain a deep understanding of the concepts related to this research, and can broaden the researcher's insight into the research topic. The data analysis used in this research is qualitative analysis, which is done by collecting relevant data to the research topic, and then analyzing and sorting the data to gain a deeper understanding of the phenomenon under investigation. The data analysis technique is carried out by summarizing and grouping the data, then interpreting the data to obtain conclusions that are relevant to the research topic.

RESULT AND DISCUSSION

Big Data Review

Interest in Big Data began to emerge in 2011, and the interest in this field has been rapidly growing. Unlike many research areas in computer science, Big Data has attracted significant attention from various media outlets. News about the advantages of Big Data and the potential for privacy violations has been a frequently discussed topic in the media, and discussions surrounding Big Data from the outset have tended to revolve around technical and socio-technical challenges. However, to date, there has been no precise definition of Big Data because various sources provide different interpretations, ultimately leading to inconsistency and contradictions.[6] Nonetheless, Microsoft presents a concise concept that Big Data is an increasingly popular term, referring to the application of advanced computing technologies such as machine learning and artificial intelligence to efficiently manage large volumes of data and complex information.[7]

According to Dawn E. Holmes, the term "Big Data" now not only refers to the total amount of data generated and electronically stored but also to specific data sets that are large in size and complexity, requiring new algorithmic techniques to extract useful information from them. These large data sets originate from various sources, so let's delve into some of these sources and the data they generate in more detail.[8] Janne Tarkoma explains that "Big Data" refers to data that is extremely large. Typically, managing and manipulating such large data sets poses logistical challenges. In technology, this term can also be used to describe a branch of computer science involved in processing such data. The use of various innovative techniques allows for the commercialization of raw data (or primary data), which refers to the unprocessed forms of Big Data collected from its sources.[9]

Meanwhile, one interpretation provided by the leading information technology consulting firm, Gartner, is: "Big Data is information assets with high volume, velocity, and/or variety that require new forms of processing to enable enhanced decision making, insight discovery, and process optimization."[10] This diversity of definitions confuses and hinders consistent discussions about Big Data. Generally, the characteristics of Big Data include Volume (quantity), often exceeding a total data size of more than one terabyte. Velocity (speed of growth) of data, where data grows rapidly in a short period. Variety (diverse forms or formats of data) can include data in various forms such as text files, database tables like MySQL, Excel files, or other data formats.[11]

Big Data is a term that refers to the large volume, high velocity, and diversity of data generated in the digital world. Data sources for Big Data include sensors, mobile devices, social media, business transactions, and many more. The key characteristics of Big Data are typically described using the term "3V": First, Volume, which encompasses a vast and continuously growing amount of data, surpassing the capacity of traditional data processing systems. Second, Velocity, where data is generated rapidly, either in real-time or at high frequencies, requires fast data processing and analysis capabilities. Third, Variety, which includes various types of data from different sources and formats, such as text, images,

videos, and others, poses challenges in processing and analysis. In addition to the "3V", the concept of Big Data often involves "4V", including Veracity (Accuracy), which covers the varying levels of data accuracy, requiring thorough data validation and verification. The concept of Big Data offers the potential for gaining new insights, smarter decision-making, and innovation in various fields such as business, science, and healthcare. However, challenges in managing, storing, analyzing, and securing data in the context of Big Data are areas of concern that need to be addressed.[12]

Big Data can consist of various forms of data, including structured and unstructured data such as financial data, text, multimedia, and genetic mapping. Unlike conventional data analysis, much of Big Data is unstructured or semi-structured, requiring different techniques and tools for processing and analysis. To handle this complex data, distributed computing environments and Massively Parallel Processing (MPP) architectures are often used to absorb and analyze data in parallel. Authorities and regulators have defined Big Data as a collection of factors that involve data collection from various sources scattered across different locations. Currently, the decreasing cost of data storage and increasing capacity enable more intensive data processing activities. Data obtained from various sources generally have characteristics such as property data, open data, licensed data, and public domain data.[13]

Legal Construction of the Use of Big Data to Support Sustainable Innovation in the Digital Era

Amidst the advancements of globalization and digitalization, Big Data is not confined by national boundaries. Therefore, cross-border cooperation and legal harmonization are key factors in addressing challenges and ensuring effective regulation of Big Data ownership. International collaboration facilitates the exchange of information and experiences among countries regarding the regulation of Big Data ownership. This enables countries to share knowledge, best practices, and learnings from their experiences in addressing issues related to Big Data ownership. This can support Indonesia in formulating better and more effective policies. Through international cooperation, countries can collaborate in developing shared standards and frameworks for regulating Big Data ownership. Uniform standards and coordinated frameworks can help address regulatory differences and ensure consistency in data protection, privacy, security, and access to Big Data.[14]

Collaboration facilitates the exchange of information and evidence necessary for law enforcement related to Big Data ownership. Countries can cooperate in the investigation, prosecution, and prevention of legal violations related to Big Data ownership. It is crucial for maintaining market integrity and preventing practices of monopoly or antitrust violations. Furthermore, legal harmonization also has significant impacts on regulating Big Data ownership in Indonesia. Legal harmonization refers to efforts to align and unify legal regulations at the international, regional, and national levels. There are several benefits of legal harmonization in regulating Big Data ownership. Legal harmonization ensures clarity in regulations related to Big Data ownership. With a uniform legal framework, companies can better understand their obligations and responsibilities regarding Big Data ownership. It encourages compliance with rules and reduces ambiguity in legal interpretation. Additionally, legal harmonization helps create consistent data protection and privacy for individuals and companies. With a uniform legal framework, data protection and privacy can be consistently regulated, reducing uncertainty and increasing public trust in the use of Big Data.[15]

Legal harmonization can promote the smoothness of trade and investment related to Big Data. With a consistent legal framework, foreign companies may feel more confident in investing in Indonesia and contributing to the Big Data market. It can drive economic growth and innovation in the digital sector.[16] In regulating Big Data ownership, Indonesia needs to establish international cooperation and undertake effective legal harmonization. International

cooperation can enrich knowledge and experience in regulating Big Data, while legal harmonization can create a clear, consistent legal framework supportive of the development of the Big Data industry.

Although the term Big Data has not been explicitly recognized in Indonesian legislation, regulations regarding data, in general, have been addressed in Law No. 11 of 2008 concerning Electronic Information and Transactions, which was revised by Law No. 19 of 2016 concerning Amendments to the Electronic Information and Transactions Law. Article 1 (1) of the law defines Electronic Information as one or a series of electronic data that includes, but is not limited to, text, sound, images, and others, that have meaning or can be understood by authorized parties. Similarly, in Government Regulation No. 82 of 2012, the same definition of data is stated in Article 1 (6). From the explanations of these two articles, [electronic] data is considered as part of electronic information, regardless of its size, growth, or variations in form. Thus, indirectly, Big Data is considered to be included within the scope of these regulations. However, it is important to note that legislative regulations should be dynamic and not limited to specific points, as the nature of data can change rapidly.[17]

The entire process of gathering information from Big Data can be segmented into five stages: Acquisition and Recording, Extraction, Cleaning and Annotation, Integration, Aggregation, and Representation, as well as Modeling and Analysis, and Data Interpretation. These stages form two main subprocesses: data management and data analysis. Data management involves processes and technologies that support obtaining, storing, preparing, and retrieving data for analysis. Meanwhile, data analysis refers to techniques used to process and gain insights from Big Data. Therefore, Big Data analysis can be seen as a subprocess within the overall process of 'information extraction' from Big Data. In terms of its form and composition, data comes in various types:[18]

a. Structured Data: Data that has predefined types, formats, and structures (for example, transaction data, OLAP data cubes, traditional relational databases, CSV files, and simple tables);
b. Semi-structured Data: Data in text file format with recognizable patterns, allowing for analysis (for example, XML data that is self-descriptive and organized by XML schema);
c. Semi-structured Data: Inconsistent text data that requires effort, tools, and time to format (for example, web data that may contain data values with varying formats);
d. Unstructured Data: Data that lacks clear structure, including text documents, PDF files, images, and videos.

Big Data obtained from social media platforms such as Facebook, Twitter, LinkedIn, and others can be utilized by integrating this data with business data from companies, such as customer data stored in company databases or product sales data, and so on.[19] Big data from various e-commerce platforms is stored using Big Data, which will provide many benefits for business actors. This privacy protection arrangement is reflected in the 1945 Constitution, Article 28G Point (1), which guarantees the right of every individual to be protected from threats to their privacy, honor, and property. It is also regulated in Law Number 38 of 1999 concerning Human Rights (Human Rights Law). Article 14 Point (2) of the Human Rights Law asserts the right of individuals to seek, obtain, store, process, and convey information through various available means. Article 29 Point (1) confirms the right to privacy protection of individuals, families, and property. Meanwhile, Article 31 guarantees freedom of communication through electronic media with guarded secrecy, except by order of the court or other competent authorities by applicable law.

The government, as a regulator, has established policies to protect the personal data of the public, with the hope that this will become a standard for legal protection of consumer rights related to the use of Big Data by companies in Indonesia. If there is a breach of data by companies, the government can intervene to ensure the security and confidentiality of

personal data of the public. According to the Indonesian Civil Code Book Part Two, personal data is considered "objects" and can be classified into four categories based on its nature: tangible objects, intangible objects, movable objects, and immovable objects. Property rights have characteristics of absolute rights and are protected from third parties. The owner of an object has rights over that object. In the context of debt settlement, property rights provide priority in debt payment; and property rights provide the basis for legal actions.

In the Indonesian Civil Code Book, there is no specific explanation regarding personal data. However, according to research, personal data can be considered as something intangible and has economic value for its owner, which can be traded if owned by someone else. In Law Number 19 of 2016 concerning Electronic Information and Transactions, Article 26 paragraph (1) states that derivative regulations are regulated by other legislation. Before data is used by others, permission must be obtained from the data owner. If the data is misused without permission, the data owner has the right to file a lawsuit in court. Nonetheless, in practice, the biggest challenge is the issue of proof in civil lawsuits, which results in difficulties for data owners or consumers in the legal domain. Especially with widespread concerns regarding data breaches, the right to privacy erasure becomes increasingly relevant.

Legally, privacy protection related to personal data or Big Data of an individual is regulated in the Electronic Information and Transactions Law (ITE Law). The ITE Law has provisions that are preventive against the negative impacts of information technology on individuals and society. For example, Article 26 paragraph (1) of the ITE Law emphasizes that any use of information through electronic media involving the personal data of an individual must be based on the consent of the individual concerned. This provision is the only article that explicitly highlights the importance of personal data protection. Other articles, such as Articles 27-37, generally prohibit violations of rights and misuse of data and information of an individual without permission, which can harm the individual concerned.[20]

Derivative regulations related to the protection of personal data are regulated in Government Regulation Number 71 of 2019 concerning the Organization of Electronic Systems and Transactions (PP PSTE). PP PSTE details various aspects related to personal data, such as collection, processing, storage, and destruction of data. Every individual intending to use data in the context of electronic media is required to obtain permission beforehand. Article 26 paragraph (2) of the ITE Law provides the legal basis for parties who feel aggrieved due to violations of data usage to file lawsuits in court. However, as seen in the Tokopedia case, difficulties in proving violations in civil litigation processes in Indonesia have hindered consumers from claiming their rights regarding alleged personal data breaches. It is further exacerbated by the emergence of the concept of the right to privacy erasure or "right to be forgotten."

PP PSTE has been enforced since 2016, entrusting the Ministry of Communication and Informatics with the responsibility of establishing a data center within the framework of electronic system providers in Indonesia. However, the implementation of this regulation has not been fully optimal as supervision over electronic system providers is still not maximal. Most electronic system providers have not fully complied with the provisions stipulated in PP PSTE. To enhance compliance, the government as the regulator can formulate derivative regulations that are more easily applicable, conduct socialization about PP PSTE, and perform regular and periodic inspections. On the business side, they can maintain the confidentiality of the personal data of the consumers they serve. Meanwhile, the government is also responsible for providing appropriate and secure electronic data storage facilities for the public.

CONCLUSION

Based on the research results, the Legal Construction of Big Data Usage to Support Sustainable Innovation in the Digital Era can be summarized as follows: In facing the digital era and the increasingly widespread use of Big Data, it is important to have adequate legal frameworks to regulate data usage and access. Therefore, efforts are needed to develop legal policies focused on promoting innovation in Big Data usage. Legal harmonization and international cooperation are crucial factors in regulating Big Data usage. Given the cross-border nature of Big Data, cooperation with other countries in developing comprehensive frameworks can help address legal and technical challenges related to data usage and access. In regulating Big Data ownership, the Essential Facility principle also needs to be considered. In the context of Big Data, platforms or infrastructures that store, manage, and provide access to large datasets can be considered Essential Facilities that need to be regulated and accessed fairly. Specific regulations governing Big Data usage in Indonesia are needed. Currently, there is no regulation specifically addressing Big Data ownership. The government and relevant institutions need to study and develop relevant legal policies to address the digital era and the development of Big Data. Therefore, updates and improvements to regulations and legal constructions accommodating technological changes are necessary to ensure the protection of interests in using Big Data to support sustainable innovation..

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