

DATA OWNERSHIP IN REGULATING BIG DATA IN INDONESIA THROUGH THE PERSPECTIVE OF INTELLECTUAL PROPERTY

Hari Sutra Disemadi

Faculty of Law, Universitas Internasional Batam, Indonesia

Email: hari@uib.ac.id

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Abstract

Big data is the process of collecting, analyzing, and utilizing data, which is necessary for the development of many kinds of technologies that are already highly-integrated into the daily lives of many people. The concept of data ownership is often used to be the basis to support the efforts to regulate big data. This point of view argues that data has a number of elements of ownership that needs to be recognized by intellectual property law but does not clearly explain the conceptual connection of data, big data, and intellectual property. Using the normative legal research method, this article found out that the integration of intellectual property elements into the conceptualization of big data regulation could threaten the antitrust or business competition climate in Indonesia. Additionally, the normative space for big data regulations through the intellectual property rights perspective is still too small to be comprehensively described and still needs more concrete evidence from the actual utilization of big data itself. This research aims at providing points of normative reference for future studies on the potentials and risks of regulating big data under the framework of intellectual property law.

Big data merupakan proses pengumpulan, analisis dan pemanfaatan data yang berperan penting dalam perkembangan berbagai macam teknologi yang sudah sangat terintegrasi dalam kehidupan masyarakat. Konsep kepemilikan data merupakan konsep yang kerap dijadikan dasar dalam upaya meregulasi big data. Sudut pandang ini berargumen bahwa data memiliki unsur kepemilikan yang harus dihormati oleh

hukum kekayaan intelektual, namun tidak secara jelas menjelaskan konseptualisasi antara data, big data, dan kekayaan intelektual. Dengan menggunakan metode penelitian hukum normatif, penelitian ini menemukan adanya pelekatan nilai kekayaan intelektual ke dalam konseptualisasi pengaturan big data, yang mana dapat mengancam iklim persaingan usaha di Indonesia dan secara normatif pengaturan big data melalui hak kekayaan intelektual masih sangat kecil untuk dijabarkan dan membutuhkan bukti yang lebih konkret dari pemanfaatan big data itu sendiri. Penelitian ini bertujuan untuk memberikan rekomendasi secara normatif untuk penelitian di masa mendatang mengenai peluang dan risiko pengaturan big data dalam kerangka hukum kekayaan intelektual.

Keywords: data ownership, big data, intellectual property

Introduction

The integration of technological developments into everyday life has brought many changes in life's order, in economy, society and culture. This change also altered the landscape of technology usage, which is now very dependent on data, and creates the term 'data-driven technology'.¹ Data is now a significant component of current technological developments and is often considered the most essential commodity in the world.² The development and usage of technology today require companies to generate data and use that data continuously. Data collection is often carried out through an automated system to get huge amounts of data, simplify the process, and analyze them.³

Big Data is a field that explores the process of collecting and analyzing data to ensure the sustainability of the current technology.⁴ The concept of big data has been used by almost all existing business sectors and has influenced many aspects of social life.⁵ Mass and systematic use of data have now become the norm in the business world, especially in the technological world. Data is often considered as

1 Xiaowen Huang, "Legal Traceability of Information Leakage of Artificial Intelligence Rural E-Commerce Shopping Guide Platform Based on Big Data," *Journal of Physics: Conference Series*, no. 042033 (2021), <https://iopscience.iop.org/article/10.1088/1742-6596/1744/4/042033/meta>.

2 Hari Sutra Disemadi, "Urgensi Regulasi Khusus Dan Pemanfaatan Artificial Intelligence Dalam Mewujudkan Perlindungan Data Pribadi Di Indonesia," *Jurnal Wawasan Yuridika* 5, no. 2 (2021): 177–99, <https://doi.org/10.25072/jwy.v5i2.460>.

3 Ridha Aditya Nugraha, "Perlindungan Data Pribadi Dan Privasi Penumpang Maskapai Penerbangan Pada Era Big Data," *Mimbar Hukum - Faculty of Law of Universitas Gadjah Mada* 30, no. 2 (August 7, 2018): 262–76, <https://doi.org/10.22146/jmh.30855>.

4 Huang, "Legal Traceability of Information Leakage of Artificial Intelligence Rural E-Commerce Shopping Guide Platform Based on Big Data."

5 Dian Parluhutan, "Analisis Hukum Kompetisi Terhadap 'Big Data' Dan Doktrin 'Essential Facility' Dalam Transaksi Merger Di Indonesia," *Jurnal Persaingan Usaha* 1, no. 1 (2021): 84–97, <https://doi.org/10.55869/kppu.v1i1.14>.

the most important commodity in this era because of business developments in technology and the enormous economic impact. The increasing value of data in the economy and business world has also given rise to the term “data is the new oil,” which equates the intangible value of data with oil as a mineral (petroleum). The importance of data in society creates an intense urgency for its protection. This protection is based on the conceptualization of data that describes the elements that make up the data. Data is essentially a collection of information about a thing. In the technological context, data is all information resulting from the use of technology.⁶ This kind of data does not always include personal data from the users, but it becomes the identity because it represents the attitude or behavior that a user reflects when using technology.⁷

Data protection generally refers to the protection of personal data that are continuously collected by various technological systems.⁸ In this case, the owner of personal data is considered a legal subject who has an interest, referring to the privacy rights owned by each user of the various latest technologies.⁹ Additionally, actual data can be called ownership because it resulted from certain activities or actions a person takes, which automatically create some data or several data sets with their respective use.¹⁰ From this point of view, the data will, essentially, always be different and unique because each technology user has a different behavioral pattern in using a technology (usage pattern).¹¹ Since the data generated by each technology user will always be different, this uniqueness can be related to data ownership.

6 Sarah Brayne, “The Criminal Law and Law Enforcement Implications of Big Data,” *Annual Review of Law and Social Science* 14, no. 1 (October 13, 2018): 293–308, <https://doi.org/10.1146/annurev-lawsocsci-101317-030839>.

7 Dimas Prayoga et al., “Risiko Keamanan Data Pribadi Pelanggan Dalam Penggunaan Big Data,” *Jurnal Nasional Komputasi Dan Teknologi Informasi (JNKTI)* 5, no. 3 (2022): 459–63, <https://doi.org/10.32672/jnkti.v5i3.4381>.

8 Ardiana Hidayah and Marsitiningih Marsitiningih, “Aspek Hukum Perlindungan Data Konsumen E-Commerce,” *Kosmik Hukum* 20, no. 1 (August 19, 2020): 56–63, <https://doi.org/10.30595/kosmikhukum.v20i1.8251>; Sekaring Ayumeida Kusnadi, “Perlindungan Hukum Data Pribadi Sebagai Hak Privasi,” *AL WASATH Jurnal Ilmu Hukum* 2, no. 1 (2021): 9–16, <https://doi.org/10.47776/alwasath.v2i1.127>.

9 Nugraha, “Perlindungan Data Pribadi Dan Privasi Penumpang Maskapai Penerbangan Pada Era Big Data.”

10 Mas Rara Tri Retno Herryani and Harsono Njoto, “Perlindungan Hukum Terhadap Kebocoran Data Pribadi Konsumen Online Marketace,” *Transparansi Hukum* 5, no. 1 (2022), <https://doi.org/10.30737/transparansi.v5i1.3096>.

11 Abigail Natalia Bukit and Rahmi Ayunda, “Urgensi Pengesahan RUU Perlindungan Data Pribadi Terhadap Perlindungan Kebocoran Data Penerimaan SMS Dana Cepat,” *Reformasi Hukum* 26, no. 1 (June 27, 2022): 1–20, <https://doi.org/10.46257/jrh.v26i1.376>.

The unique data ownership perspective is the cornerstone of the argument for applying intellectual property law to conceptualize data. It cannot be used as the only argument for conceptualizing data in intellectual property law. Data is essentially not an innovation and is only a fact or a collection of facts. Data is not naturally copyrighted because it is the findings of a process that may not be directly related to the content of the data. It is different from other objects recognized as a form of intellectual property, which results from the creation and/or innovation process. Although the data itself is not copyrighted, it can have a copyright element if the data is in the form of a compilation. Creative collections or arrangements, annotations, or data selection may be protected by copyright. This large amount of data has a broader and more significant meaning because it can lead to new and valuable discoveries such as science, manufacturing processes, or improvements to various existing technologies. Based on this solid angle, the data collection process can be considered unique because it is a part of a creation or innovation process. The collection of large amounts of data as the central part of big data is an essential topic in developing intellectual property concepts in the digital era due to the vital role of big data in various forms of invasion and creation worldwide.

Previous studies, on the push to regulate big data, primarily focused on many elements of privacy along with its legal implications but does not indicate possible legal implications with the realm of intellectual property law. To date, there is still no fixed single approach of understanding big data and building its normative construction.¹² Favaretto et.al found that the core issue of regulating big data is finding the correct practical definition of it to then remove the conceptual confusions surrounding its concept.¹³ A topic that has not been properly studied is the establishment of clear relations between big data and data, along with their legal implications.

This research explores data and the constituent elements in data conceptualization. It is then linked to big data as a data processing process that has become a standard in various business and technology sectors. This research was conducted to clarify the position of data in intellectual property law and how big data can change that position through a broader and more open conceptualization of intellectual property law as a consequence of the development of the existing technology. Based on the relevance of big data, this research analyzes the potential and risks of using

12 A.A. Andreasyan, A.A. Balyakin, and M.V. Nurbina, "Some Features of the Legal Regulation of Big Data," in *Proceedings of the 2nd International Scientific and Practical Conference on Digital Economy (ISCDE 2020)* (Paris, France: Atlantis Press, 2020), <https://doi.org/10.2991/aebmr.k.201205.101>.

13 Maddalena Favaretto et al., "What Is Your Definition of Big Data? Researchers' Understanding of the Phenomenon of the Decade," ed. Florian Fischer, *PLOS ONE* 15, no. 2 (February 25, 2020): e0228987, <https://doi.org/10.1371/journal.pone.0228987>.

the concept of data ownership to regulate big data to prove that data ownership is not the right concept in regulating big data, especially in Indonesia.

Research Methods

This research aims to find and relate the similarities of the elements contained in the concept of intellectual property and data through the analysis of the meaning and function of big data as the latest data processing standard is widely used in various fields, especially in the business world. Furthermore, this research employs normative legal research methods to find and relate the similarities between intellectual property and data. This research method is used to analyze the elements in the conceptualization of intellectual property and data in the Indonesian legal system. The findings from the process then focused on big data to answer the urgency of regulating big data practices in Indonesia. Focusing on big data has the intention to relate the similarities between intellectual property and data to further open up the space for big data regulation without having to threaten the interests of intellectual property law in Indonesia. In exploring the conceptualization system of big data and Indonesian intellectual property law, this research uses some secondary data, namely Law of the Republic of Indonesia Number 28 of 2014 on Copyright and Law of the Republic of Indonesia Number 13 of 2016 on Patents. The analysis is supported by the public interest theory to fully find the actual facts in the society and how these facts could have legal implications for the benefits of the public. These two secondary data are used to compare existing legal arrangements in Indonesia with various forms of conceptualization of big data, data, and intellectual property to analyze the potential and risks of bridging the concept further.

Discussion

Expanding the Meaning of Intellectual Property through the Conceptualization of Big Data

Intellectual Property is a fairly broad concept.¹⁴ Wealth is a general term for an intangible asset that develops the uniqueness of a product, a non-physical process, or a result as an essential part of a creation or innovation. Creation and innovation are all processes that are unique at each stage and as a whole, which affect how a product is formed as a final result. Intellectual property is the creation of the mind, such as the invention of form, literary and artistic works, design,

¹⁴ Dara Quthni Effida, Ety Susilowati, and Kholis Roisah, "Upaya Perlindungan Hukum Indikasi Geografis Terhadap Salak Sidimpuan Sebagai Kekayaan Alam Tapanuli Selatan," *LAW REFORM* 11, no. 2 (September 30, 2015): 188, <https://doi.org/10.14710/lr.v11i2.15765>.

symbols, names, and images used in trade.¹⁵ This definition is incomplete because a definition should comprehensively describe, not just refers to a long list or collection of things that need to be further explained.¹⁶ This deficiency is a common problem considering the scope of the definition of creation and innovation itself, which is pretty broad. The World Intellectual Property Organization (WIPO) then emphasized this definition by explaining the process of thought behind creation or innovation, using the term “intellectual acts”.¹⁷ Although it is not explained in detail, the closest assumption explicates that “process” is an inseparable part of a creation or innovation. The definition of Property was expanded to include legal rights resulting from intellectual activity in the industry, science, literature, and arts.¹⁸ In addition to intellectual activities, WIPO also adds the term legal rights to emphasize that, essentially, the concept of Intellectual Property was created to protect various existing intellectual Properties through legal channels.

These two terms added by WIPO are fundamental in developing intellectual property because they open up the protection space for creation or innovation, which results from various stages of the “process.” The emphasis on “process” here does not draw an understanding of the intellectual property that remains focused on the end product of creation or innovation but gives more emphasis to the process of thinking or innovating through specific techniques as an integral part of the result.¹⁹ In big data, this expansion of meaning is critical, considering that “data” is something that cannot be protected by intellectual property law. The main reason why intellectual property rights cannot be attached to data lies in the origin of the data itself. Data does not come from a single process of thought or unique set of techniques. Data is also not a unique form of innovation or creation, originating from one or a series of “intellectual activities” described by WIPO. It is relevant in digital data, which is mainly and automatically formed through technology or data due to converting physical to digital forms.

15 Karlina Sofyanto, “Perlindungan Hukum Hak Kekayaan Intelektual Atas Pengetahuan Tradisional Terhadap Perolehan Manfaat Ekonomi,” *Kanun Jurnal Ilmu Hukum* 20, no. 1 (April 2018): 149–62, <https://doi.org/10.24815/kanun.v20i1.9832>; Hari Sutra Disemadi, “Contextualization of Legal Protection of Intellectual Property in Micro Small and Medium Enterprises in Indonesia,” *Law Reform* 18, no. 1 (2022): 89–110, <https://doi.org/10.14710/lr.v18i1.42568>.

16 Mircea Negruță and Ion Năftănăilă, “IP Delimitations: A Managerial Point of View - CORE,” *Review of International Comparative Management* 11, no. 3 (July 2010): 491–505.

17 Mircea Negruță and Ion Năftănăilă.

18 World Intellectual Property Organization, *WIPO Intellectual Property Handbook: Policy, Law and Use*, WIPO PUBLICATION No. 489 (E), 2008.

19 Lutfun Nahar, “Human Rights Perspective on the Role of WIPO in Promoting Intellectual Creativity,” *SSRN Electronic Journal* (2012), <https://doi.org/10.2139/ssrn.2178069>.

The expansion of the intellectual property meaning must also be adapted to the realities existing in the society. In the context of technological developments that utilize automation processes and ease of access, the amount of data required is getting bigger. It is what causes the widespread use of various forms of technology existing in the society. The technology itself depends closely on the quantity of data, better known as data-driven technology. Almost all the latest technology in society depends on the availability of extensive data. The relevance of the data must also be under the objectives and developments of science and technology to improve people's lives. The relevance of the data can be seen in the emergence of data sharing culture and data reuse in the world of science and technology, which accelerates the development and innovation of various sectors of people's lives.²⁰ This kind of trend strengthens the relevance of data in society because it exponentially increases the use of data both in small and large quantities.

In daily life, small data must be separated from big data. Big data combined with the latest data collection and analysis techniques enable information gathering and analysis in a short time. Even with the Internet of Things (IoT), which is less efficient when compared to big data, it can enable various kinds of data utilization in various fields other than business, such as a considerable improvement in health services quality.²¹ The opportunity for big data to be used in various vital sectors shows that technology and data have enormous potentials to improve people's quality of life, especially when using big data systems that are more efficient in data collection. The example is the usage of an extensive quantity of data in the health care system. Based on these facts, the meaning of intellectual property can be expanded because the realities in society encourage it.

The next question from conceptualizing the expansion of intellectual property meaning in the context of data is about which data contains elements of intellectual property. Small amounts of data needed for traditional purposes, like collecting the identity or preferences of users of a particular application or technology, cannot be associated with intellectual property law even if the data collection is performed within a business context. Identity cannot be categorized into intellectual property because it does not include specific processes of thought

20 Remedios Melero and Carolina Navarro-Molina, "Researchers' Attitudes and Perceptions towards Data Sharing and Data Reuse in the Field of Food Science and Technology," *Learned Publishing* 33, no. 2 (2020), <https://doi.org/10.1002/leap.1287>.

21 Farha Nausheen and Sayyada Hajera Begum, "Healthcare IoT: Benefits, Vulnerabilities and Solutions," in *Proceedings of the 2nd International Conference on Inventive Systems and Control, ICISC 2018, 2018*, <https://doi.org/10.1109/ICISC.2018.8399126>.

that result in creation or innovation. It is unlike the case with big data, which is the process of collecting large amounts of data with wide variations. The large number and wide variety make big data more than just a data collection. In the context of personalizing internet-based technology with all its security risks, it is more than algorithm problems.²² Big data can include data that are closely related to a creation or innovation, in large or small amounts.²³ Through these findings, big data can be said to be a window for expanding the meaning of intellectual property because it can concurrently collect data that is not usually found by traditional data collection processes.²⁴ Big data here also acts as a barrier to the expansion of this meaning, distinguishing ordinary data in small quantities from large and varied large quantities resulting from the big data process.

Expanding the meaning of intellectual property is also made possible by the Indonesian intellectual property legal system. The Indonesian legal system does not define “intellectual property” through any law. The Indonesian intellectual property legal system consists of various kinds of legal products such as laws and ministerial regulations, each of which regulates one or several forms of existing intellectual property. The absence of an explicit definition of “intellectual property” in Indonesian intellectual property law does not mean that Indonesia does not have a basic concept of intellectual property law.

Findings of the Creation and Innovation Process in Big Data

Another area where data may be protected by copyright is the data indicating a trade secret in the form of a formula, process, design, or manufacturing method of a particular product, either it directly or indirectly affects commercial interests. This point of view is obtained from expanding the meaning of intellectual property by emphasizing the creation process. Data that includes information determining how a creative process works can be found in small data sets, but it is more often found in big data systems because the amount is much more significant and the variety is much wider. The frequency of finding data containing elements of the process of creation or innovation like this is very high and, at the same time, makes big data a risk of violating Intellectual Property Rights.

22 Charlotte A. Tschider, “Beyond the ‘Black Box,’” *Denver Law Review* 98, no. 3 (2021), <https://doi.org/10.1090/noti1408>.

23 Meng Lu, “Intellectual Property Protection of Big Data,” in *Journal of Physics: Conference Series*, vol. 1693, 2020, <https://doi.org/10.1088/1742-6596/1693/1/012012>.

24 Traditionally here does not only mean direct or offline data collection, but also various kinds of data collection carried out before the emergence of Big Data, such as surveys, door-to-door censuses, or even more modern ones such as the Internet of Things (IoT).

The definition of big data can explain why and how elements of the process of creation or innovation can be found in big data itself. The term big data can be defined in several ways. The way used frequently to define big data is mentioning its three main features, then the fourth feature that also shows the characteristics of big data, and the fifth feature, which is a derivative of the first three features. The five functions are volume, veracity, velocity, variety, and value. As the first feature, volume is the first characteristic distinguishing big data from other data contained in smaller data sets. Veracity or correctness is the second important feature in big data, given the large quantity of data generated by big data processes, which are prone to errors or inaccuracies. The third feature, velocity, is the speed at which a data set is generated, collected, and analyzed. The fourth feature is variety, which is a differentiating factor for various types and origins of data, including internet browsers, social media, applications, cameras, cars, and various other forms of technology that can be used as data sources. Finally, if all the previous features are present, the big data corpus will likely have a significant 'value'.²⁵

The development of big data depends on data sharing mechanisms that can encourage efficient use of data. The relevance of data sharing in big data is increasingly important, along with the increasing use of data (data reuse) in data utilization systems worldwide. The existence of elements of the creative process in the data set generated by big data is the result of the variety feature of big data, which allows the creation of data that cannot be collected through the traditional data collection process. Big data also enables more in-depth analysis of large data sets carried out by automated processes. This finding, combined with data-sharing and data reuse, creates an urgency driving the trend of data utilization that considers the balance between interests in data sharing and intellectual property rights. Intellectual property is a monopoly that respects privacy rights, while data sharing emphasizes openness to the public interest.²⁶ This trend has transformed big data into a more controlled and systematic form. Big data is not just a data collection with large capacity, fast growth, multiple types, and low-value density as the characteristics, but also a new generation of information system architecture and technology that performs data acquisition, storage, and correlation analysis.²⁷

25 Daniel Gervais, "Exploring the Interfaces between Big Data and Intellectual Property Law," *Journal of Intellectual Property, Information Technology and E-Commerce Law* 10, no. 1 (2019), <https://doi.org/10.2139/ssrn.3360344>.

26 Xiao Ma, "Is Big Data a Big Dilemma or a Big Opportunity in China? Intellectual Property Protection in the Era of Big Data," *China and WTO Review* 4, no. 1 (2018), <https://doi.org/10.14330/cwr.2018.4.1.03>.

27 Ma.

The Indonesian intellectual property legal system also makes this expansion of the meaning of intellectual property.²⁸ Indonesia's intellectual property legal system consists of various laws and ministerial regulations, each of which regulates one or more forms of intellectual property protected by Indonesia. Indonesian intellectual property law does not explicitly regulate the meaning of the term "intellectual property" but directly regulates various forms of intellectual property in the form of legal products. It is an excellent approach to the concept of intellectual property rights because it allows the legal product to regulate various kinds of matters that are more technical when compared to legal products regulating factors and general definitions that compose a legal object problem.

Not explaining (explicitly) the basic meaning of intellectual property in various Indonesian intellectual property legal systems does not necessarily mean that Indonesian intellectual property law has no doctrinal basis. Indonesia joined WIPO in 1979 and signed the WTO Agreement, which is also attached to the TRIPs Agreement. Consequently, it makes Indonesia a country that must comply with the regulations described in the TRIPs Agreement. The absence of an explicit definition of intellectual property in Indonesian intellectual property law opens up enough space for the expansion of meaning to be associated with big data as an inseparable part of the various technologies in Indonesian society today. By referring to the intellectual property law doctrine originating from WIPO, the expansion of the meaning of intellectual property in Indonesia can be carried out. It has been done by developed countries, especially in Europe, which is also a member of WIPO.

The form of the Indonesian intellectual property legal system, which discusses specific intellectual property topics, can also provide more space for expanding the intellectual property meaning because it is more detailed in technical terms. Thus, it has constituent elements. In Law of the Republic Indonesia Number 28 of 2014 on Copyright, Article 1 provides a detailed definition of the various elements that make up copyright so that it can be protected by intellectual property law. For example, Article 1 number (3) explains about creation: "A creation is any creative work in science, art, and literature that is created by inspiration, ability, thought, imagination, dexterity, skill, or expertise that is expressed in a tangible form". This explanation about creation is thoroughly discussed in the Copyright Law because it is an inseparable element of copyright as one of the intellectual properties that exist in Indonesia. A detailed explanation of an object of intellectual property law

28 F Yudhi Priyo Amboro, "Problematika Pendaftaran Merek Untuk Usaha Mikro, Kecil Dan Menengah Di Kota Batam," *Journal of Judicial Review* 21, no. 1 (2019): 1–14.

and its detailed elements makes it easier to find the critical points of intellectual property rights governed by big data's conceptualization.

Limitations of Big Data Conceptualization in the Indonesian Intellectual Property Law Regime

The existence of intellectual property elements in the data set produced by big data does not necessarily make the concept of intellectual property, especially in a legal context, able to fully explain big data elements. It requires clear doctrine and conformity with reality and facts in Indonesian society. Several things limit the integration of the concept of data in big data into the concept of intellectual property. However, they are not the weakness of the data concept in big data or intellectual property. These limitations are legal conflicts that are prone to occur, given the close relationship between data issues and data protection, in the relationship between data and business competition which is a new challenge for antitrust regulations in various fields worldwide.²⁹ These relationships simultaneously reflect the relationship between intellectual property and business competition, which is also quite close.

To understand the limitations of expanding the intellectual property meaning through big data, it is necessary to know the background of the features offered by big data and how these features can be continuously developed. The advantages and features of big data result from the development and use of machine learning techniques. big data can even be said to be the best utilization system for machine learning, considering the massive potential of big data. Hence, it can be used in various important areas of life by Indonesian society. Machine learning, further, is a computational process that allows a computer to develop by itself through the data obtained from the computer experience in several computational tasks.³⁰

The main feature of machine learning is automation, where computers seem to be able to learn from their experiences and develop their systems. It is what makes machine learning one of the essential elements of big data, considering that big data processes involving large quantities of data require a system, which is capable of running on its own and developing its own computing capabilities. Rapid growth in the ability of networking and mobile computing systems to collect and transport large amounts of data, a phenomenon often referred to

29 Bulut Girgin, "Data Protection: A Friend or Foe of the Competition Law," SSRN Electronic Journal, 2020, <https://doi.org/10.2139/ssrn.3403992>.

30 M. I. Jordan and T. M. Mitchell, "Machine Learning: Trends, Perspectives, and Prospects," *Science* 349, no. 6245 (2015), <https://doi.org/10.1126/science.aaa8415>.

as “big data”, has happened in the last decade. Scientists and engineers who collect such data frequently turn to machine learning for problem-solving to derive valuable insights, predictions, and decisions from the data set. Granted, the sheer size of the data makes it important to develop scalable procedures that combine computational and statistical considerations, but the problem goes beyond the size of modern data sets; this is the granular and personal nature of most of the data.³¹

The first limitation is the subject behind the process of creating Indonesian intellectual property. As explained in the section on expanding the meaning of intellectual property, big data can generate data sets that contain items protected by intellectual property laws. Through machine learning, not only generate data, but big data can also analyze data or even create new creations or innovations from the data obtained. The problem is the concern that the creation or innovation is not the work of the humans’ mind. Various legal products that regulate intellectual property in Indonesia regulate the subjects behind the creation or innovation recognized by intellectual property. Article 1 point 3 of Law of the Republic Indonesia Number 13 of 2016 on Patents explains the subject of patent rights, namely inventors: “inventor is one or several people who jointly implement the ideas that are poured into the activities producing the invention”. Here, the Patent Law clarifies that the person behind an innovation granted a patent is a person and not a machine or the result of a particular commutation system, as related to the regulation in item 1 of the same article; “a patent is an exclusive right granted by the state to an inventor for his/her invention in the field of technology for a certain period to carry out the invention or to give approval to another party to implement it”. Although the patent holder can be owned by a group or even a company, the emphasis on the human aspect in the manufacturing process and the result of innovation still underlies the philosophy of applying intellectual property rights to patents in Indonesia.³² The same thing is also found in the copyright law, which explains the subject behind a creation through Article 1 number (2): “Creator is a person or people who individually or jointly produce a unique and personal creation”. The copyright law even deepens the details by using exclusive rights and economic rights to share the use or benefits of copyright through the explanation of paragraph (4); “what is meant by “exclusive rights” are rights that are only reserved for the author so that no other party can use

31 Jordan and Mitchell.

32 Part Three, Patent Subjects. Articles 10-13 of the Patent Law.

the right without the permission of the author. Copyright holders, who are not the author, only have a portion of the exclusive rights in the form of economic rights". The regulation regarding copyright is also basically not different from the Patent regulation in terms of emphasizing the human aspect in a creative process. The patent regulation does not provide room for expansion of meaning in this case because it generally returns to the doctrine of intellectual property law resulting from human intellectual abilities.³³

The problem that arises from the subject matter behind this creation or innovation is business competition, and the business climate will be chaotic. The creation (in large quantities) of new literary and artistic materials without direct human input will challenge humans working in the marketplace. It is already the case with machine-written news reports. Thus, deciding whether material created by a computing system should be protected by copyright can significantly impact the market for creative works. Suppose the material created by a computing system is copyright-free; then, the computing system will produce free creations or innovations that compete with paid goods (made by humans who expect financial gain). Suppose the material produced by machines is protected by copyright and their use is potentially subject to payment, this may be a commercial equalizer between humans and machines. However, then who (person or legal entities) should be paid for computer work? Then, there will be a problem of border definition. Some works will be created by humans and machines working together. Can we apply the idea of co-authoring? or should we consider machine-produced parts (if separable) copyright-free, thus limiting protection to parts that human can identify? These things are still being debated in various parts of the world. However, until now, there is no consensus on the actual value of data, which indirectly complicates the development and spread of capital through various investment methods for developing data-driven technology.³⁴

The problem of market chaos also has the potential to get worse as data-sharing and data-reuse trends develop. Machine learning can even assist big data in collecting and analyzing data from industrial fields that are not directly related. Cross-industry collaboration can enable endless possibilities. Machine learning enables analysis and conclusions that can be drawn by applying machine learning methods to dietary data from household appliances, biometric data, and

33 Obie Persada Sitanggang, "Subjek Dan Ruang Lingkup Paten Serta Pelaksanaan Paten Oleh Pemerintah (Section Class) Obie Persada Sitanggang," OSF, 2019, <https://doi.org/10.31219/osf.io/4qz38>.

34 Vipal Monga, "The Big Mystery: What's Big Data Really Worth? - WSJ," *The Wall Street Journal*, 2014.

weather pattern data around the user.³⁵ All the data for features like this comes from various applications that may not be related but still produce relevant data for other applications.

Through intellectual property law, not a few think that data can be regulated from a proprietary point of view even though the data is in the form of units or small collections. This view only relies on the content of information in a data and does not explain how the information appears as data. The Government of the People's Republic of China has tried to make data containing the information of the intellectual property objects through general provisions of civil law. However, it later removed this provision from the draft general provisions of the civil law because of the difficulty in bridging the conceptualization of the static regulation implementation plan with the existing intellectual property law in China.³⁶ Data ownership is, in fact, a concept that only contains a small part of the potentials and risks posed by the use of big data in today's society.

Big Data Classification Problems in Indonesian Intellectual Property Law

Big data regulation is important and needed, given its relevance amid technological developments and its integration into people's lives that is and will continue to take place. It can be seen from how important it is to integrate the predecessor of big data, namely the Internet of Things (IoT), into the economic system to facilitate the formation of a circular economy. The Internet of Things (IoT) ability to reach various industrial fields through the variety and volume of data generated is considered influential in forming a circular economy, where the market can be filled by products that have cycles that can be maintained in the long term.³⁷ Considering the position of big data as a newer and more efficient data collection and utilization system, integration into such an integrated economic system should be considered by the Indonesian government to fully exploit the more significant potential of big data from the Internet of Things (IoT) without violating the interests of society as consumers and users of existing technology.

35 Hyunjong Ryan Jin, "Think Big! The Need for Patent Rights in the Era of Big Data and Machine Learning," *New York University Journal of Intellectual Property and Entertainment Law* 7, no. 2 (May, 2018).

36 Andreasyan, Balyakin, and Nurbina, "Some Features of the Legal Regulation of Big Data."

37 Gustavo Cattelan Nobre and Elaine Tavares, "Assessing the Role of Big Data and the Internet of Things on the Transition to Circular Economy: Part II An Extension of the ReSOLVE Framework Proposal through a Literature Review," *Johnson Matthey Technology Review* 64, no. 1 (2020), <https://doi.org/10.1595/205651319x15650189172931>.

The urgency to regulate big data comes from the public interest because society has been integrated with a lot of technologies and digital services that operate using big data. The public interest theory is ultimately an economic regulation urgency, naturally created by the people. Meanwhile, big data itself is not exactly an economic issue. The use of big data has been an important part of the economy. Hantke-Domas proposes that regulation seeks the protection and benefit of the public at large.³⁸ Perhaps a wider view of this theory existed back when the emphasis on economy and protecting the market through regulation were not the trend in legislative research. Ironically, the wider view of this theory was explained by one of its most enthusiastic critics, Schubert Jr, who argued that the justification of this theory is about how it defines the public interest not as a substance but rather in terms of the structuring of decision-making processes.³⁹ Therefore, analyzing the possibilities to regulate big data must revolve around the risks and benefits it impose on its users, which in this case are the Indonesian people.

Integrating big data into the economic system must start with proper and efficient regulation. Too tight regulations, like any other commodity, will harm the related market. The relevance and use of data through big data are comprehensive and affect various industries and markets, making the balance in big data regulation a sensitive matter. However, big data regulation in Indonesia can be said to have a pretty good chance because privacy awareness in Indonesia is still far below the European Union.⁴⁰ Besides having a good impact on consumers, high privacy awareness can have a destructive impact because it can encourage overregulation. Data protection and a set of privacy laws that are too strict will also affect other regulations related to datalike intellectual property. Indonesia is in a pretty good position because data protection regulations in Indonesia are developing, so regulations regarding Big Data do not have to go through a problematic harmonization stage. Furthermore, in big data settings, there needs to be a classification of the forms of intellectual property that can arise from using big data. The problem is that classifying creations or innovations found in data sets generated by big data is challenging.

38 Michael Hantke-Domas, "The Public Interest Theory of Regulation: Non-Existence or Misinterpretation?," *European Journal of Law and Economics* 15 (2003): 165–194, <https://doi.org/10.1023/A:1021814416688>.

39 Glendon A. Schubert, "The Theory of the Public Interest," *Political Research, Organization and Design* 1, no. 5 (1958): 34–36, <https://doi.org/10.1177/0002764258001005>.

40 Dewi Puspa et al., "Data Privacy, What Still Need Consideration in Online Application System?," *Jurnal Sistem Informasi* 16, no. 1 (2020), <https://doi.org/10.21609/jsi.v16i1.941>.

Copyright, the assembly of literary and artistic works created based on the choice of content and arrangement will be protected as long as it does not violate the copyright of the collected works. Simple collections of works are not protected by copyright. Article 10 of the TRIPs Agreement stipulates: “data collection or other material, whether machine-readable or in any other form, which due to the selection or arrangement of its content, constitutes an intellectual creation that must be protected. Such protections do not prejudice any copyright in the data or materials (these protections do not cover the data or materials themselves)”.

The convention establishes specific threshold requirements for originality, but applying this standard in each country depends on the country’s laws. Common law countries require authors to create independently, whereas continental law countries require a higher standard of originality.⁴¹ Indonesia, for example, through the copyright law, explains the elements of copyright in detail in Article 1, which consists of 28 regulatory points. This arrangement is much more complicated when compared to the United States, which relies primarily on the federal congressional right to regulate intellectual property as the primary basis, which is further regulated by state regulations.

Copyright regulation in Indonesia is also following the principle of the expression of idea dichotomy, which explains that copyright focuses more on protecting the composition of information than ideas in the content. Therefore, randomly distributed data that are not the central part of creation cannot be protected by the copyright law and cannot be bridged by its conceptualization.⁴² However, the regulation of the copyright law in Indonesia emphasizes the existence of creation or the creation of something, not just a collection of works. The elucidation of Article 18 of the Copyright Law mentions collections as “other written works”; “what ‘other written works’ means is other manuscripts of poetry collections, general dictionaries, and general daily newspapers...” However, the collections mentioned here are collections of works, each of which conforms to the definition of copyright as described in the copyright law and does not conflict with the classical definition of intellectual property. Data, as explained earlier, is only a fact or a collection of facts and is not a creation of human thought. It is different from the definition of the main element of copyright, namely “creation” in Article 1 point 3 of the copyright Law as a work.

41 Kholis Roisah, *Konsep Hukum Hak Kekayaan Intelektual (Sejarah, Pengertian Dan Filosofi Pengakuan Hki Dari Masa Ke Masa)* (Malang: Setara Press, 2015).

42 What is meant by constitutive part is an inseparable part of a creation or innovation; if that part is omitted or neglected, the related creation or innovation cannot be formed or become a reality.

Copyright protection of data information will cause a series of problems in big data processing. Rightsholder authorization is required before processing data, but diversification of data sources makes rights protection a stumbling block and results in high transaction costs. Because big data is one of the main engines of various innovations and creations in the world today, the limitation of innovation and the development of big data can also be considered an obstacle to the development of technology and the advancement of people's living standards.⁴³ In addition, a study shows that the "data fence" that hinders the development of big data can arise from the integration of intellectual property laws based on data ownership, primarily through copyright regulation and its relation to data.⁴⁴

Patent, big data Patents are the granting of intellectual property rights to an algorithmic system (excluding abstract data).⁴⁵ The application of patents for big data faces three problems. First, many algorithms are not technological inventions but only theories or methods which cannot be subject to patent law. Second, algorithm patents require complex legal expressions because the essence of an algorithm is to examine, calculate, filter, and compress information, which can be said to be one of the primary forms of big data processing, and must also be protected by patents. It ultimately lowers the threshold of competitors entering the market because the algorithm represents a complete data processing system or can even be called an ecosystem. Suppose a businessman in the world of technology fully controls an ecosystem, the problems that arise will even impact other legal domains such as business competition (antitrust) and data protection. Third, the algorithm is patent 'frozen,' where claims are fixed and non-renewable. This third problem is also contained in the patent law, which is described in Article 3: "(1) Patents, as referred to in Article 2 letter a, are granted for new inventions, contain inventive steps, and can be applied in industry; (2) a simple patent as referred to in article 2 letter b is granted for every new invention, or development of an existing product or process, and can be applied in industry". Then the patent law explicitly explains that patents cannot be extended through Article 22: "(1) a patent is granted for 20 (twenty) years from the filing date; (2) the period referred to in paragraph (1) cannot be extended; (3)"

43 Nicholas Martin et al., "How Data Protection Regulation Affects Startup Innovation," *Information Systems Frontiers* 21, no. 6 (2019), <https://doi.org/10.1007/s10796-019-09974-2>.

44 Kush Wadhwa et al., "BYTE - Big Data Roadmap and Cross DisciplinarY Community for Addressing Socie'Tal Externalities," 11th European Semantic Web Conference - EU Projects Networking Session, 2014.

45 Michael Mattioli, "Disclosing Big Data," *Minnesota Law Review* 99, no. 2 (2014), <https://doi.org/10.2139/ssrn.2358985>.

A patent can only be granted to an invention that is “new” and cannot be granted to an old innovation that is updated; as in this case, it is an algorithm. This problem is not under the primary nature of the algorithm, which will constantly evolve, along with the machine learning process, as a part of the overall big data process. Such renewals and the non-renewal of patents will drastically reduce the value of the results obtained by the big data process.

Conclusion

Big data, as one of the most important forms of technology utilization in the world, can no longer be separated from various kinds of technological developments that exist in the world. Behind all the advantages and risks of using big data, the process of utilizing big data is, in fact, still far from the extraordinary potential it offers. It is necessary to establish regulations that protect the interests of the public, not only consumers but also the interests of the development of big data, as one of the functional joints of modern science to ensure this development. The suggestions to regulate big data with the intellectual property law using the perspective of data ownership can be dangerous. It will produce countless economic benefits at the expense of the business competition climate and damage the intellectual property legal system. However, the incompatibility of intellectual property law with the conceptualization of data in big data does not mean that big data does not contain the slightest element of intellectual property. These elements have begun to be seen along with the development of the efficiency of big data processes, where computing systems and algorithms can produce data that represents the creation or innovation process or even create works by themselves. However, it should be underlined that this development is still too early, and its potential limits are not fully understood. Thus, the regulation of big data using the concept of data ownership can be said to try to precede technological developments. Further analysis on other fields of law is much needed, especially when the harmony of the Indonesian legal system is at stake. The government, while having the responsibility to respond to public interests, needs to make sure that the benefits of regulating big data outweigh the risks.

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