March-April 2020
ISSN: 0193-4120 Page No. 10235 - 10242

Legal Aspect of Big Data Analytics as Trade Secrets

Julio Rionaldo A. - Faculty of Law, Universitas Padjadjaran, Department of Infotmation Communications Technology and Intellectual Property Law, Universitas Padjadjaran, 45363 Jatinangor, Indonesia,
Laina Rafianti - Faculty of Law, Universitas Padjadjaran, Department of Infotmation Communications Technology and Intellectual Property Law, Universitas Padjadjaran, 45363 Jatinangor, Indonesia,
Prita Amalia - Faculty of Law, Universitas Padjadjaran, Department of Transnational Business Law, Universitas Padjadjaran, 45363 Jatinangor, Indonesia,

Article Info
Volume 83
Page Number: 10235 - 10242
Publication Issue:
March - April 2020

Article History
Article Received*: 24 July 2019*
Revised*: 12 September 2019*
Accepted*: 15 February 2020*
Publication*: 12 April 2020*

Abstract:

The dawn of big data analytics comes across as an enigma that attracts the attention of business entities and academics alike, because of its potential, which is not only profitable, but it can also cause problems, especially at this age where the ubiquity of devices and appliances which can be used to access information on the internet makes this enigma all the more enchanting. This article aims to elaborate on the advanced definitions of big data analytics and information valuation from a legal perspective, in order to deliver a thorough conclusion on the subject.

Keywords: *Big Data, Data Analytics, Intangible Asset, Information, Trade Secret.*

INTRODUCTION

Data is the new oil, and information is the currency of this digital age. The value of personal data has changed marketing strategies and business models based on data analysis so acquired data about customers are becoming a critical asset in markets for big data analytics. Although this fact is often disregarded, people usually get free digital services by 'paying' with their data. Indeed, knowledge of customers' interests allows companies to predict trends and provide tailored products and more appealing advertisements. Emerging, fast-growing business models are increasingly counting on the availability of massive amounts of data about customers and their behavioral patterns in order to collect and monetize them (Banterle, 2016, pp. 2). The ability to keep key information confidential plays an important role in business competitiveness, and trade secret protection is an increasingly important legal tool for businesses to preserve such confidential information. Despite the growing importance of big data analytics in the modern economy, however, surprisingly little is known about the specific manner in which enterprises—either in the micro sector or the macro sector—protect their proprietary information. Because methods of data analysis are most commonly protected under the law of trade secrecy, and because trade secrets generally lose their legal protection if they are disclosed publicly, enterprises have traditionally been understandably reluctant to discuss either the types of trade secrets they possess (Grow, et. al., 2017), or the steps that they are taking to protect this information by considering several problematic identifications, namely information that is considered as a commercial resource, and the value of big data analytics from a legal frame of reference.

Research Methodology

The problems raised by the researcher in this article is further examined using the normative juridical approach. Normative legal research or literature includes research on legal principles, whereas the research methods is accomplished by collecting data

March-April 2020
ISSN: 0193-4120 Page No. 10235 - 10242

in accordance with what occurs in the real world, then the data is compiled, processed and analyzed to be able to provide an concluding overview of the existing problems.

Backgrounds

Formal definitions of information varies, depending on the profession or scientific discipline of each. When identified, information derives from the Latin word *"informare"* which means to give form and to inform which means to notify. Etymologically, it is therefore understood to be the formative principle of something, or to imbue that something with a specific character or quality. Information, in essence, does not constitute a specific or specialized area; it is not a particular discipline or field. Rather, information is the basis of all communication; it is used in the process of categorizing our environment helping us to cope with it (Atlan, 1983). Therefore, the study of information in all its aspects pertains to many disciplines: from science to philosophy. Information allows us to think about reality, as well as to communicate our thoughts about it. Depending on one's point of view, information represents reality or is used to construct it. So thus, information is a notification about something so that people can form their opinions based on something they recognize.

Big Data Analytics

Data analytics is a term used to describe the discovery of information in a database, it is a process that uses statistical techniques, mathematics, artificial intelligence, and machine learning to extract and identify useful information and related knowledge from various sources (Turban, 2005). The general definition of data analytics itself is the process of finding hidden patterns in the form of previously unidentified knowledge from a set of data where the data can be in a database, data warehouse, or other information storages. Data analytics processes could discern a set of information based on the association between patterns of causes and effects of an event (Larose, 2005). Thus, the data obtained can be used to determine new algorithms, and predict behavioural patterns from users that are very useful for network companies and business entities, such as from its implementation in data-based marketing campaigns.

Intangible Assets

A business entity is a modern organization that has certain activities to achieve goals that include profit, growth, business continuity, and brand image. To achieve this goal, the board of directors are parties entrusted with rights and responsibilities to production factors such as money, man, material, and methods, which we then recognize as the production process. To produce this product, the role of assets is very important, such as a land as a place to carry out operational activities, a building as a place of office, machineries as a means of production, and others as a means of supporting corporate activities. There are even types of non-physical fixed assets known as intangible assets. Each business entity must have fixed assets both tangible and intangible. Tangible assets are visible commodities that can be directly used in business operations such as land, buildings, machinery and equipment. Whereas intangible assets are commodities that cannot be directly seen with the naked eye, evidence of their existence can only be seen from such as deeds, contracts, patents, copyrights, trade secrets and so on (Smith, et. al., 1981). Stagnant business entities focus on tangible assets, while progressive companies mobilize their intangible assets. Intangible property belongs to shareholders, while intangible assets are inherent in humans inside and outside the company. In a business entity, intangible assets are information-based and have a basic element attached to the resources therein; namely corporate culture, knowledge, innovation, rights, and formulas. The existence of a business enterprise is determined by its ability to create the delivery of a value to investors and consumers. Thus, it can be considered that the life of a business entity is value creating activities (Boos, 2003). The ability of business organizations to manage and create value lies in the element of intangible assets. From the perspective of value creating activities, the main commodity of a

March-April 2020
ISSN: 0193-4120 Page No. 10235 - 10242

business entity is the knowledge or intellectual property, whereas tangible assets are only tools for humans to realize their knowledge or intellectual property in the form of goods or services.

Intellectual Property from a Legal Standpoint

Intellectual property (IP) pertains to any original creation of the human intellect such as artistic, literary, technical, or scientific creation. Intellectual property rights (IPR) refers to the legal rights given to the inventor or creator to protect his invention or creation for a certain period of time. Traditionally, IP at the international level has five acknowledged forms—patents, copyrights, trademarks, trade secrets, and industrial designs that have served as the focus for both domestic and international protection regimes. These forms also generally subsume, at least in part, many of the newer types of IP protection, including geographical indications and (potentially) traditional knowledge and cultural expressions (at least in certain forms) (Topulous, 2002, pp. 2). IP is protected in law by, for example, patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create. By striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish (WIPO, 2019). Intellectual property rights are like any other property right. They allow creators, or owners, of patents, trademarks or copyrighted works to benefit from their own work or investment in a creation. These rights are outlined in Article 27 of the Universal Declaration of Human Rights, which provides for the right to benefit from the protection of moral and material interests resulting from authorship of scientific, literary or artistic productions. The importance of intellectual property was first recognized in the Paris Convention for the Protection of Industrial Property (1883) and the Berne Convention for the Protection of Literary and Artistic Works (1886). Both treaties are administered by the World Intellectual Property Organization (WIPO).

There are a few reasons on why Intellectual Property must be promoted and protected by governments and business entities alike: (WIPO, 2019)

1) First, the progress and well-being of humanity rest on its capacity to create and invent new works in the areas of technology and culture.
2) Second, the legal protection of new creations encourages the commitment of additional resources for further innovation.
3) Third, the promotion and protection of intellectual property spurs economic growth, creates new jobs and industries, and enhances the quality and enjoyment of life.

An efficient and equitable intellectual property system can help all countries to realize intellectual property's potential as a catalyst for economic development and social and cultural well-being. The intellectual property system helps strike a balance between the interests of innovators and the public interest, providing an environment in which creativity and invention can flourish, for the benefit of all.

Role of Undisclosed Information in Intellectual Property

Protection of undisclosed information is least known to players of IPR and also least talked about, although it is perhaps the most important form of protection for industries, R&D institutions and other agencies dealing with IPR. Undisclosed information, generally known as trade secret or confidential information, includes formula, pattern, compilation, programme, device, method, technique, or process. Protection of undisclosed information or trade secret is not really new to humanity; at every stage of development people have evolved methods to keep important information secret, commonly by restricting the knowledge to their family members. Laws relating to all forms of IPR are at different stages of implementation in states, but there is no separate and exclusive law for protecting undisclosed information/trade secret or confidential information. (Naha, et. al., 2011, pp. 89) Pressures of

March-April 2020
ISSN: 0193-4120 Page No. 10235 - 10242

globalization or internationalization were not intense during 1950s to 1980s, and many countries, including third world countries, were able to manage without implementing a strong system of IPR. Globalization driven by chemical, pharmaceutical, electronic, and IT industries has resulted into large investment into Research & Development. This process is characterized by shortening of product cycle, time and high risk of reverse engineering by competitors. Industries came to realize that trade secrets were not adequate to guard a technology, especially nowadays where the *status quo* is changing into data based cloud computing. It was difficult to reap the benefits of innovations unless uniform laws and rules of patents, trademarks, copyright, etc. existed. That is how IPR became an important constituent of the World Trade Organization (WTO) (Drahos, 2015, pp. 38).

Legal Status of Trade Secrets

A trade secret is a piece of information treated as confidential by an enterprise because its particular features combined with limited access provide a competitive advantage. Such a secret piece of information can be durable or ephemeral, so long as it helps enterprises to perform better, faster or at lower cost. A trade secret may be almost any information that has economic value and provides the holder of the secret with an advantage over competitors by virtue of its possession. The meaning of the term "trade secret" is not limited to so-called "crown jewels", but potentially covers a very broad range of information held by a company as long as the requirements for protection (see below) are fulfilled. A wide variety of information can qualify as trade secrets. These include different types of technical information (e.g. designs, drawings, architectural plans, blueprints and maps, algorithms, instructional methods, manufacturing or repair processes, techniques and knowhow, document tracking processes, formulas for producing products) as well as business information (sales and distribution methods, lists of suppliers and clients and consumer profiles, business and advertising strategies, marketing plans, financial information). Even "negative" information as to "what does not work" or works less well could qualify as a trade secret (ICC, 2019). Secrecy is, naturally, an essential requisite for a trade secret in all jurisdictions recognising such protection. Such secrecy generally is not required to be absolute but its dimension can differ from jurisdiction to jurisdiction, as can other requirements for protection. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) obliges WTO member countries to protect undisclosed information providing it meets all the requirements below: (TRIPS, 1995)

1) It is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;
2) It has commercial value because it is secret; and
3) It has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

The EU Directive also defines a trade secret as information which meets these three requirements, and clarifies that "trivial information and the experience and skills gained by employees in the normal course of their employment" and "information which is generally known among, or is readily accessible to, persons within the circles that normally deal with the kind of information in question" may not be claimed as a trade secret (TRIPS, 1995) The TRIPS Agreement obliges WTO member countries to protect undisclosed information meeting certain requirements, so as to empower "natural and legal persons to prevent information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices" (TRIPS, 1995). Unlike registrable industrial property rights — such as patents, utility models, trademarks and designs — trade secrets are

typically protected without any procedural formalities. There is no need for patent-type novelty, industrial applicability or usefulness, or inventive step for information to be protected as a trade secret. Likewise, there is no need to fulfil the originality requirement applicable to copyright, and trade secrets may even be made up of components in the public domain which, if combined in ways not "known to or readily ascertainable by" a relevant public, can provide a competitive advantage and render the information valuable and proprietary. While publicity is mandatory or can be of great benefit for trademarks and patents or copyrights, public disclosure inevitably leads to the loss of trade secret protection. However, trade secrets can be protected for an unlimited period of time, whereas registered rights (except for trademarks, which can be renewed periodically and indefinitely, but are subject to a genuine use requirement) and copyrighted works are protected for a limited period of time only. Trade secret protection is often a preferred alternative for products and processes that are difficult to reverse engineer, or that are not patentable but provide enterprises with a competitive advantage, or when patent protection is slow to obtain or too costly—though implementing many of the measures needed to protect a trade secret can also be expensive and time consuming. In general, small and medium-sized enterprises tend to rely much more on secrecy than on patenting (ICC, 2019).

Information as a Commercial Resource

In order for an enterprise to protect its trade secrets, it must first understand what that information is, how it contributes to the value of the company's products or services, and what the risks are of its disclosure, misuse or contamination. The responsibility for the management of this process lies initially with the business unit or function that generates this information asset. Any confidential business information that provides a competitive edge should be identified, at least by type, and then subjected to security protocols that are proportional to its perceived value and risk. The review of an enterprise's valuable information assets to determine what qualifies as a trade secret is an important first step in the sensible management of those assets, whether they will mature into patent applications, be held for internal (secret) exploitation, or commercialized through partnerships or licensing. From this knowledge base, a strategy and management system may be constructed. Typically this will be a cross-disciplinary process, involving managers of the relevant business units and functional areas such as legal and/or IP, human resources, IT and supply chain. Following an initial effort to identify and categorize key risks and to design systems at a high level, continuing management is usually assigned to a single executive with robust reporting responsibilities. Regular reviews are undertaken by the organization's risk management and compliance practices. Unlike some forms of intellectual property, trade secrets are not registered or otherwise described in a government filing. They reflect the value of information that has been maintained in secret by a business but that may be shared in confidence with employees or with third parties who are in a confidential relationship (ICC, 2019). As a practical matter, businesses need to have a general understanding of the types of information they possess which may qualify for protection, such as in relationships where the information is shared, it is often important to provide notice of specific information considered as confidential. Factors used to help determine whether information could be a trade secret include: (ICC, 2019)

1) The value of the information, as measured by the relative advantage it provides or by the harm that would be caused by its disclosure or misuse;
2) The extent to which the information is distinct from individual skill or general knowledge, neither of which is protectable as a matter of public policy;
3) The extent to which the information is protected against unauthorized access or

March-April 2020
ISSN: 0193-4120 Page No. 10235 - 10242

misuse, both by insiders as well as by third parties;

4) The investment, effort, and money spent by the company to develop the information; and
5) The ease of ability of others to independently generate, duplicate, reverse engineer, or acquire the information.

The broad definition of trade secrets does not permit an approach governed by rigid rules, in part because only the trade secret owner can determine relative value and threats to secrecy, thereby setting priorities and adopting techniques to mitigate risk. That said, certain legal requirements merit emphasis. To qualify as a trade secret under current present laws, information must have some commercial value, whether actual or potential. "Potential" value may exist even if the information has not yet resulted in a commercialized product or service, or if the information comprises failed experiments or other "negative" information, typically resulting from research, that can help point the way toward success. As already noted, value can be reflected in the extent of competitive advantage that the information provides, or in the harm that would result from improper acquisition, use or disclosure (IPR Enforcement Directive, 2006).[1] There is no minimum value threshold, not least because the value of information is often very difficult to determine and may continually change. In practical terms, any perceived benefit is likely to qualify. It is worth noting that trade secrets need not be exclusive: even if the information may be known and applied by other firms, as long as it is not generally known, there may be value in the fact that a company's competitors do not know that it possesses the information.

Big Data Analytics as Intangible Assets

As previously described beforehand, that the escalating increase in social and economic activities of the worldwide community has entered an era of information or data-oriented society. The information system and technology have been used in many different sectors of life, ranging from trade, education, health, arts, transportation, tourism, environment, to the entertainment sector. Big data has a massive character and it keeps increasing because of the ease and speed of access to information technology or internet media with each passing day. With just one touch, it can spread data widely and change into various formats in a short time. Utilization of information from big data processes including data analytics was intended to be monetized and evaluated in financial indicators in order for it to be able to generate substantial competitive value as a commercial feature. This phenomenon is caused by developing business enterprises that are now capitalizing on data monetization as a financial growth tool. All of this as explained above and in previous chapters by this research shows that big data analytics within the Industry 4.0 framework, acts as an intangible commodity that could definitively increase the valuation of a business enterprise, so therefore data analytics from data mining can be interpreted as an asset that can be optimized. This frame of mind is based on the progress of various big data-based business entities such as *Amazon*, and *Netflix* whose asset valuations are getting higher and higher than each registered users and traction obtained (O'Neill, 2016), accompanied by a comparison to Article 1 paragraph (4) of the Uniform Trade Secrets Act issued in 1979 and subsequently amended in 1985 in the United States which states the general definition of trade secrets, that "trade secret" means information, including a formula, pattern, compilation, program device, method, technique, or process, that derives independent economic value, actual or potential, from no being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

March-April 2020
ISSN: 0193-4120 Page No. 10235 - 10242

Conclusion

In accordance with the description in previous chapters of this research that is related to today's digital era environment, most of the information stored in the form of data, customer data and price information can be protected by trade secret doctrine, in connection with the understanding of intangible assets that have been previously described by researchers on this paper, namely the basic principle that assets aim to create beneficial value for an entity, where the value can be used for the needs of the activities of the intended entity so as to create economical valuations. The information obtained from a series of data based on certain variables, can be considered as an intangible asset from the background of the value arising therein. The simple parable would be that big data analytics can be interpreted as some sort a secret recipe for a popular F&B Industry because of its appetizing food and beverage, for instance Kentucky Fried Chickens from its fried chickens, or The Coca-Cola Company from its cola beverages. In this case study, the business entity in question are enterprises that utilizes big data for its commercial purposes, such as for its commercial marketing strategy towards the community to help them indoctrinate ideals, predict trends, and promote goods each according to its own key performance indicators. Thus, assuming that information obtained from big data analytics through the data mining process is a variety of trade secret due to its information carrying commercial value, big data analytics qualifies as a form of intellectual property, and therefore is an intangible asset that is protected by legal statutory provisions whether internationally, or nationally. Technological convergence like big data and valuation of information as an economic resource have many positive elements, but on the other hand without a holistic and a comprehensive regulation in the form of applicable positive laws, technological convergence has the potential to cause great chaos[2] in the world of information and communication technology not only for governments and business entities, but to the society as a whole, especially in this era of information explosion, hence where an adequate legal construction can effectively function as a facilitator of man's character through legal certainty in welcoming a fierce future that is full of uncertainty.

REFERENCES

1. Atlan, H. (1983). Information Theory. In Cybernetics: Theory and Application. London, UK: Hemisphere Publishing.
2. Banterle, F. (2016). The Interface between Data Protection and IP Law: The Case of Trade Secrets and the Database sui generis Right in Marketing Operations, and the Ownership of Raw Data in Big Data Analysis, Thesis, University of Milan.
3. Boos, M. (2003). International Transfer Pricing, The Valuation of Intangible Assets. The Hague: Kluwer Law International.
4. Budhijanto, D. (2018). Teori Hukum & Revolusi Industri 4.0. Bandung: Logoz Publishing.
5. Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the Enforcement of Intellectual Property Rights, Recital 14.
6. Drahos, P. (2015). Developing Countries and International Intellectual Property Standard-Setting, The Journal of World Intellectual Property, 2(2), 765-789. doi: 10.1111/j.1747-1796.2002.tb00181.x
7. Grow, L., Grow, N. (2017). Protecting Big Data in the Big Leagues: Trade Secrets in Professional Sports, Washington and Lee Law Review, 74(Forthcoming), Available at SSRN: https://ssrn.com/abstract=2908287
8. International Chamber of Commerce, (2019)"Protecting Trade Secrets: Recent EU and US Reforms", Report, Retrieved from https://iccwbo.org/publication/trade-secrets-report/
9. Larose, D. T. (2005). Discovering Knowledge in Data: An Introduction to Data Mining. Hoboken NJ: John Wiley & Sons Inc.
10. Naha, C. S., Bhattacharya, S. (2011). Intellectual Property Rights: An Overview and Implications in Pharmaceutical Industry, Journal of Advanced

Pharmaceutical Technology & Research, 2(2), 88-93. doi: 10.4103/2231-4040.82952

11. O'Neill, E. (2016). 10 Companies That Are Using Big Data. CA Today. Retrieved from https://www.icas.com/ca-today-news/10-companies-using-big-data
12. Smith, J. M., Skousen, F. (1981). Intermediate Accounting. Cincinnati, OH: South-Western Publishing Co.
13. Topulous, K., Franklin, J. A. (2002). Basics of International Intellectual Property Law by Gregory Letterman. Ardsley NY: Transnational Publishers, 2001. PP. XV. 377. American Journal of International Law, 30(1), 163-166. doi: 10.1017/S0731126500009720
14. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).
15. Turban, E. (2005). Decision Support Systems and Intelligent Systems. Yogyakarta: ANDI.
16. World Intellectual Property Organization, What is Intellectual Property. Retrieved from https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf.

[Acknowledgements]

17. The author would like to thank his supervising professor i.e. Dr. Laina Rafianti, S.H., M.H., and Prita Amalia, S.H., M.H. for assisting the author throughout this research.

[Declaration of novelty and no competing interests]

18. By submitting this manuscript I declare that this manuscript and its essential content has not been published elsewhere or that it is considered for publication in another outlet.
19. No competing interests exist that have influenced or can be perceived to have influenced the text.