



The Potential for Price Cartels Through The Use of Algorithms in The Digital Market

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ABSTRACT

Algorithms are increasingly being utilized to set pricing in the context of business competition in the Digital Market. As a result, potential breaches and anti-competitive impacts have already emerged. The algorithms become a new problem because it is difficult to discover the problem points in the system. Whether it is the fault of the algorithm system's programmer, creator, or user. Therefore, the issues that will be examined in this study are as follows: (1) What is the potential for business competition law that arises from the use of price algorithms in the digital economy era? (2) How to prove the use of price algorithms in the digital economy era as a form of price cartel? The purpose of this study is to analyze the potential for business competition violations caused by the usage of price algorithms and provide a strategy for the proof of cartels using the algorithm. The research method used is doctrinal or normative juridical research with statutory, case, and comparative law approaches. The results of the research show that the price algorithm can cause unfair and uncompetitive business competition among business actors. Furthermore, business actors will collude to establish the same price in the relevant market. This circumstance has the potential to lead to the formation of a price cartel. This, of course, necessitates a difficult proving process. The strategy of proving through circumstantial evidence is important in determining whether or not there was a tacit agreement to carry out a price cartel through a price algorithm.

Keywords: cartel; price algorithm; digital market; circumstantial evidence.

1. INTRODUCTION

The development of technology and information has resulted in changes and developments in many aspects of human existence, including business activities. Recent changes in the context of business activities are known as the digital economy era. The digital economy is a business conducted through virtual media that involves the creation and exchange of values, transactions, and relationships amongst mature economic actors using the internet as a medium of exchange [1]. The general understanding is that the Internet and Artificial Intelligence (AI) are used in all economic activities. The digital economy has the potential to change people's economic activities, transforming them from manual to fully automated. As a result, every daily activity and business can be completed effortlessly and quickly. Digitalization is the process of restructuring social life through digital media. Many things have changed in the business sector as a result of digitalization. Digitalization has been applied to production, distribution, and numerous business decisions.

One of the digital business decisions involves determining the selling price of the commodities produced. Prior to digitalization, prices were calculated using a variety of data gathered manually or conventionally. Raw material prices, labor wages, distribution expenses, profit targets, competitor prices, and so on are gathered and analyzed. From the results of this analysis, the businessmen can determine the price. Price formation data can be gathered digitally and automatically in a digitalized business. An algorithm will examine these data and determine an optimal price for the company's products at certain times and under certain conditions. This is referred to as the price algorithm. The use of price algorithms has started to spread globally, including in Indonesia. On a global scale, the use of a price algorithm is clearly stated by a travel accommodation company, namely Airbnb. Airbnb's pricing algorithm considers a variety of factors, including popularity and customer reviews [2].

Price algorithm digitalization is also used by two online transportation companies in Indonesia, which are Gojek and Grab [3]. According to Grab, price is affected by the number of users, the severity of congestion, and particular events. In this context, algorithms can assist companies in responding to market conditions in a quick and efficient manner [4]. Predatory prices occur when the algorithm obtains competitors' prices and then uses them as a reference for establishing lower prices. Meanwhile, a price-fixing agreement occurs when a competitor's pricing is utilized as a reference to equalize prices. The price created is what distinguishes the two. Apart from the distinctions, the two share similarities in that predatory pricing includes a price-fixing agreement.

Meanwhile, the Business Competition Law recognizes the fundamental principle that business actors are prohibited from entering into agreements with their competing business actors to set prices below market prices, which can result in unfair business competition [5]. This phrase implies that there must be two business actors who are intended to compete with each other by setting pricing jointly. This certainly has the potential to create entry barriers for potential competitors.

From the description above, it is known that the existence of price-fixing agreements is the most important thing to analyze in cases of algorithm abuse, as referred to in Law Number 5 of 1999 concerning the Prohibition of Monopolistic Practices and Unfair Business Competition (hereinafter referred to as Law Number 5/1999). In cases of algorithm abuse, compliance with the terms of the agreement outlined in Article 5 of Law Number 5/1999 is crucial. The analysis that must be conducted is to determine whether the algorithm can become a type of price-fixing agreement, as defined in Article 5 of Law Number 5/1999.

The potential for pricing misuse has piqued the interest of several legal researchers to discuss it. Lina M. Khan, in her article "*Amazon's Antitrust Paradox*," published by The Yale Law Journal, is one of them. The article discusses the potential for various violations of business competition law in Amazon's trade practices, including price-fixing [6]. In her article, Lina M. Khan elaborated on the potential for various anti-competitive activities in Amazon's trade practices. Predatory pricing and vertical integration are the primary focus. However, pricing determination is not explored extensively. Furthermore, the Berkeley Journal of Employment and Labor Law published an article titled "*Uber as a For-Profit Hiring Hall: A Price Fixing Paradox and Its Implications*" by Sanjukta M. Paul. This article examines Uber's pricing cases in two cities: Seattle and Kalanick. Section 1 of the Sherman Act, which governs business competition law in the United States, serves as a benchmark [7].

In Indonesia, there has been little discussion about the potential misuse of pricing algorithms that violate business competition laws, and a few cases have occurred. From the perspective of business competition, do the problems that occur in the use of price algorithms in the digital economy have the potential to form price cartels or other forms of violations? Who is responsible for business competition violations if the price fluctuation process uses an algorithm? These questions must be researched and thoroughly examined, bearing in mind that the digital economy has both positive and negative impacts.

The potential benefits of employing the pricing algorithm for companies come alongside the potential drawbacks. One potential disadvantage is the possibility of price adjustments with market competitors' prices. When the market is also digital, it is relatively simple to obtain competitor price data. A company can develop an algorithm that can detect the prices of competitors in a market and then use that information as one of the price-forming factors. This is where the potential for misuse of algorithms to perform price-fixing emerges, which can potentially lead to unfair business competition.

Without legal regulation of price fluctuations in mature competition, it is feared that the use of algorithms may lead to the emergence of automatic price agreements or collisions between business actors that will be unaffected by the legislation. The French (*Autorite de la Concurrence*) and German (*Bundeskartellamt*) business competition authorities recently conducted research on how the use of algorithms in the digital economy could lead to cartel practices and price-fixing. The question of who is responsible for business competition violations when the price fluctuation process uses an algorithm becomes a headline of discussion among the world's business competition supervisory authorities.

Is it possible to treat an algorithm as a separate legal subject? If so, who will be held accountable? Is it possible that the algorithm can automatically adjust its own price? Or will the algorithm always require a person to input prices into the system? It is feared that if the business competition laws are not properly regulated, the use of algorithms will lead to automatic price collusion amongst business actors without being affected by the law.

The prohibition of price-fixing in Indonesia is contained in Law Number 5/1999. Pricing is regulated in Articles 5 to 8 of Law Number 5/1999. There are four types of pricing: price-fixing agreements, price discrimination, predatory pricing, and resale price arrangements [8]. Predatory pricing and pricing agreements may occur as a result of the algorithm's ability to see competitors' prices. Based on the background and various issues described above, the problems raised in this study are: (1) What is the potential for business competition law that arises from the use of price algorithms in the digital economy era? (2) How to prove the use of price algorithms in the digital economy era as a form of price cartel?

2. RESEARCH METHODS

This study employs doctrinal research methodologies to analyze the two problems. Doctrinal research, according to Terry Hutchinson, is "...research which provides a systematic exposition of the rules governing a particular legal category, analyzes the relationship between rules, explains areas of difficulty and, perhaps, predicts future development." [9]. This study uses statutory, case, and comparative law approaches.

3. RESULTS AND DISCUSSION

3.1. The Use of Algorithms and Potential Business Competition Violations

According to Yuliana in the discussion "*Algorithms and Potential Anti-competitive Behavior in the Digital Market from a Legal Aspect*", when discussing violations, or potential violations and anti-competitive impacts due to the use of algorithms, an argument will appear: "*It wasn't me, it was the algorithm!*", which means it wasn't me but was regulated by an algorithm system. The algorithm becomes a new problem because it is difficult to discover the problem point of the system. Whether it is the fault of the algorithm system's programmer, creator, or user. In other words, the digitization system becomes a scapegoat as a form of alibi for anti-competitive behavior.

Algorithms can facilitate coordination, which means that the use of algorithms aims to collect certain data or information based on the desired needs, such as the use of algorithms to facilitate meetings nowadays. The algorithm encourages transparency or openness, which will benefit consumers. When the selling price is disclosed openly and accessible to consumers, they will be able to choose or compare prices offered by business actors, such as a comparison of the pricing of item X offered by Companies A and B. It will benefit producers and business actors in addition to being advantageous for consumers. When consumers have access to prices, business actors will immediately adjust prices according to the prices desired by consumers. However, in reality, business actors frequently misuse algorithms. When the data or information about the majority of price options chosen by potential customers is disseminated, business actors will adjust the same price based on the consumer's pricing preferences. As a result of the absence of pricing competition given by business actors, information from the algorithm system can cause an unfair business competition climate.

In the field, the business competition authority frequently runs into difficulties determining whether or not business competition violations occur in the relevant market. According to Law Number 5/1999, a cartel is a prohibited agreement formed by business actors to regulate the amount of supply and price of goods and services in a market. However, proving whether or not a cartel exists in the digital economy is extremely challenging. Business actors will provide reasons for changing prices, such as data or information on the price level demanded by consumers. To carry out their business activities, digital businesses must gather data or information from the public. Because they do not have space or time limitations, the majority of people have accessed or used social media to facilitate communication with others. To access the application or social media, the public must provide their personal data or information, and this data or information is the target desired by business actors. When there are business actors or companies that give or sell this information or data, it is no longer a secret.

As explained previously, the existence of an algorithmic system will result in the openness or transparency of data and information. Transparency, on the one hand, is a positive thing. On the other hand, it will cause dilemmas or problems for business competition. The existence of an algorithmic system provides business actors with information regarding the prices and preferences of potential customers for goods and services. This can result in uncompetitive business competition among business actors. The worst-case scenario is that business actors will collude to establish the same price in one relevant market, with the argument or reason that the price demanded by consumers will be adjusted.

Dynamic price algorithms are required to handle price fluctuations in real time. Inevitably, a great deal has been incorporated into e-Commerce. Then, some of these modules or data have a significant impact on how the algorithm functions. The batch algorithm can then be used to estimate the next price or to identify trends or strategies based on previous data. Meanwhile, reinforcement learning is used to produce automatic actions based on environmental rewards and punishments. Of course, these shortcomings and threats must be considered when employing dynamic pricing applications. Without proper business competition law regulation, it is likely that the use of algorithms will automatically lead to the emergence of price conspiracies between business actors without being affected by the law.

In comparison, the French (*Autorite de la Concurrence*) and German (*Bundeskartellamt*) business competition authorities conducted studies on how the use of algorithms in the digital industry can lead to cartel practices and price-fixing. It is feared that if the business competition law is not properly regulated, the use of algorithms will lead to automatic price collusion amongst business actors without being affected by the law. It is difficult to determine whether there is a price-fixing practice (raising and lowering) in the digital economy. Actually, it is known that there is no man behind the computer because the algorithm runs on its own.

So far, it is clear that the most important aspect in determining the existence of a price-fixing agreement is the agreement. The Indonesian Commission for the Supervision of Business Competition (KPPU) Regulation Number 4 of 2011 concerning Guidelines for Article 5 (Pricing) of Law Number 5/1999 (KPPU Regulation No. 4/2011) confirms that if no agreement exists, the business actor cannot be charged under Article 5 of Law Number 5/1999. Article 1 number 7 of Law Number 5/1999 defines an agreement as "*an act of one or more business actors to bind themselves to one or more other business actors under any name, whether written or unwritten.*" The concept of an agreement has been expanded in the development of the KPPU's decision to

include a concerted action that fulfills specific conditions as an agreement [10]. According to Michael F. Belchman, the condition for concerted action is the presence of unity of purpose, understanding, or a meeting of minds that has occurred between them [11].

Even though the definition of an agreement in the context of a price-fixing agreement has been expanded in this way, business actors continue to seek ways to fix prices without leaving any evidence of the agreement. A price algorithm is one method. An algorithm, according to Zach Y. Brown and Alexander Mackay, is a set of rules that processes some input into the intended output [12]. As a result, the price algorithm is a set of rules that processes data input into price output. Business actors commonly use a price algorithm because it helps establish prices automatically and allows them to adjust prices more frequently in response to supply, demand, and competitor behavior [13]. Thus, the pricing algorithm allows business actors to practice price-fixing agreements without any explicit agreement between business actors, but the agreement is obtained through the use of a price algorithm [14].

The price algorithm, which can be misused to conduct pricing actions, works as follows:

1. Limited Liability Companies A and B (hereinafter referred to as PT A and PT B) use the same algorithm, which automatically equalizes the price whenever the price changes.
2. PT A raises the price of goods from 100,000 IDR (Indonesian Rupiah) to 110,000 IDR, and the PT B algorithm automatically equalizes the price to 110,000 IDR.
3. When PT B raises the price from 110,000 IDR to 115,000 IDR, the PT A algorithm automatically equalizes the price to 115,000 IDR.
4. If PTA raises the price from 115,000 IDR to 120,000 IDR, then the algorithm of PT B automatically equals the price to 120,000 IDR. The description above can be explained in the following scheme:

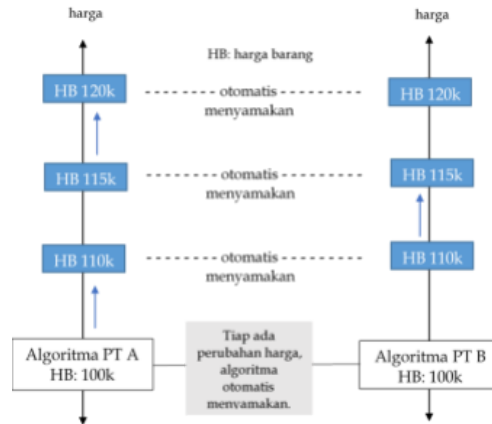


Figure 1 The Use of Pricing Algorithms in Pricing Agreements

According to the above explanation and scheme, the price-fixing agreement eliminates price competition. The prices of goods will increase as well. Of course, this will be detrimental to consumers because they will have no choice but to purchase goods and/or services at costs that are higher than acceptable.

So far, no decision has been made in Indonesia involving anti-competitive behavior and/or actions using price algorithms. Therefore, it is necessary to consider other countries' decisions in this matter, specifically the Competition and Markets Authority UK (CMA UK) decision in the *Poster Case* and the European Union Court of Justice (CURIA) decision in the *E-Turas* case. The *Poster Case* is a case between Trod Limited (Trod) and GB Eye Limited (GBE) [15]. The relationship between the parties is between a retailer (Trod) and a supplier (GBE). Both sell the same products on the Amazon UK platform, namely licensed sports and entertainment posters and their frames. Trod filed a complaint with GBE because GBE sold goods at a lower price than Trod. As an alternative, GBE and Trod agreed to a price-fixing agreement. Initially, the agreement was established manually, but implementation was difficult due to price fluctuations. Then GBE and Trod used software to implement their agreement. The software used by GBE and Trod is different. The way the software works is that the GBE software will match the price with Trod only if Trod charges the lowest price among the other competitors. If there are other competitors who charge lower prices than Trod's, then the GBE software

will adjust to the lowest price. Trod Software places GBE on the 'ignore list', so the algorithm used to charge lower pricing than competitors does not apply to GBE. As a result, Trod will not charge a lower price than GBE.

CMA UK stated that GBE and Trod had entered into an agreement or joint action that prevented, limited, or caused distortion of business competition (Section 2(1) of the Competition Act 1998). E-Turas is an online travel booking system [16]. E-Turas first notified users that they could vote to reduce the discount from 4% to 0%–3%. Following that, an email was sent explaining that the discount allowed is between 0% and 3% and that if someone gives a discount greater than that, it will be automatically changed to 3%. The action was thus considered to be in violation of the prohibition on entering into agreements or joint actions that prevent, limit, or cause distortion of business competition (Article 101 of the Treaty on the Functioning of the European Union).

The use of a price algorithm, as illustrated above, has the potential to violate the provisions of Article 5 of Law Number 5/1999 concerning price-fixing agreements. This price algorithm facilitates price-fixing agreements, even allowing business actors to create the same price without any valid agreement between them. An algorithm governs the occurrence of tacit collusion [17]. As a result, it is required to determine if the use of the algorithm violates Article 5 of Law Number 5/1999, specifically whether just employing the same price algorithm is sufficient to prove that there is an agreement to fix the price as referred to in Article 5 of Law Number 5/1999.

3.2. Proof of Algorithms as a Form of Price Agreement

When there is a shift from the traditional economy to the digital economy, especially the issue of price fixing agreements, the competition authorities will face several challenges, including first defining the “same relevant market” and second determining the distinction between “mere parallel actions” and “concerted actions” facilitated by artificial intelligence algorithms. Furthermore, many parties have expressed concern about price-fixing agreements, particularly “evidence that legally and convincingly” violates Article 5 of Law Number 5/1999. The use of indirect evidence as a basis for sentencing is in question in terms of proof. The question raised is what the KPPU’s basis for employing indirect evidence as a basis for deciding cartel cases is and what parameters the KPPU follows when using indirect evidence as a basis for deciding cartel cases [18].

According to Oliver Wendell Holmes (1987), “*For the rational study of the law, the black-letter man may be the man of the present, but the man of the future is the man of statistics and the master of economics.*” [19]. Mastery of economic analysis (indirect evidence) to examine and analyze tacit collusion from the existence of coordination between business actors through algorithms has its challenges in Indonesian material law. This is because the degree of proof of tacit collusion is difficult to prove if it only refers to conventional evidence tools in the norms of Article 42 Law Number 5/1999 in the form of witness statements, expert statements, letters and/or documents, instructions, and statements of business actors [20]. Especially if the evidentiary discourse approaches the concept of parallelism, which is not regarded as a violation from a legal point of view. According to KPPU’s Regulation No. 4/2011, proving the occurrence of parallel business conduct is insufficient evidence to establish the existence of a price-fixing agreement because additional analysis (plus factors) is required to differentiate parallel business conduct from illegal agreements [21]. Identical pricing (parallel behavior) that arises from this form of awareness can also occur as a result of independent observations by business actors of what their competitors are doing.

The important thing in determining whether there is anti-competitive behavior is to define the market. The traditional market is dominated by manual transactions involving cash (coins or paper), whereas the digital market is based on the rapid dissemination of information [22]. According to Flores L., the digital market should be interpreted in two ways: as a media market and as a television (news) digitalization market [23]. The digital market differs from digital marketing in that digital marketing, according to Otero, is a combination of customization and mass distribution to achieve a marketing goal [24]. The digital market has infiltrated the application of AI, which is used to analyze consumer behavior and behavioral preferences so that AI may provide rational decisions to users (business actors) to obtain higher profits. However, it is important to highlight that Law Number 5/1999 does not provide a precise definition of the digital market [25]. According to Udin Silalahi, the absence of established norms governing digital markets makes KPPU hesitant to conduct a full analysis of the digital market, such as Gojek’s acquisition of Tokopedia, which later became a group company called GoTo [26].

The term data-driven economy is used to describe how the digital economy develops for business actors. According to Taufik Ariyanto, “*the concept of the data-driven economy itself derives from an economic concept that uses data or big data as the core business or as the result of side processes to provide value-added products for the companies concerned.*” [27] Demchenko said: [28]

“A data-driven economy uses digitalization of processes and products or services, it collects and processes large amounts of data that include both personal and non-personal data.”

Demchenko further emphasized that the data-driven economy is inseparably connected to the concept of data, as follows: [29]

“The data economy tends to involve the maximum possible amount of data that may be produced by multiple sources, so creating a trusted environment for data exchange and trading is a key enabling factor for data markets and data-driven technologies.”

The big data management cycle begins with the process of generating data in various forms, formats, and sources [30]. The process then moves on to the extraction, transformation, and loading (ETL) stage, which leads to the warehouse-storage process. Storage data that has been processed will be processed further for specific purposes, such as online analytical process (OLAP) reporting or data mining processes [31]. In the context of digital economy actors, consumer big data plays an important role in being analyzed by AI and used to analyze consumer and market behavior.

When compared to Germany, where the big data aspect has been introduced as a new criterion in determining market power [32]. Germany’s business competition law regulations in the digital sector have been revised through the ninth amendment to the German Competition Act (GCA) [33]. The German Competition Authority (*Bundeskartellamt*) conducted research on how price-fixing practices can result from the use of big data, algorithms, and AI in the digital industry [34].

In its report, the European Union Competition Authority analyzed the potential for two or more learning algorithms to detect signals from one business actor to another. In the *E-Turas* case (on the scope of concerted practices and technological collusion), the Lithuanian Competition Authority discovered evidence of online travel agents violating anti-competition regulations by limiting discounts of more than 3% while using the E-Turas online travel booking system [35]. The E-Turas System is considered to play a role as a facilitator in anti-competitive violations by sending “digital messages” to affiliated ticket booking companies to limit discounts of more than 3%.

It is difficult to prove price fixing using an algorithm. *Cum adsunt testimonia rerum, quid opus est verbis*. This classic legal adage, if translated, means that when the evidence and facts are present, then what is the use of words? [36] This legal adage has a deep meaning: the most important thing in law is proof. According to Eddy Hiarej, the truth of a legal incident will be obtained through this proof [37]. *In casu a quo*, in order to be able to disclose the existence of the use of a pricing algorithm as a form of price fixing agreement, it must first be understood as evidence in business competition law.

In relation to business competition, it has been stipulated in Article 42 of Law Number 5/1999 *jo*. Article 45 of KPPU’s Regulation Number 1 of 2019 Regarding Procedures for Handling Cases of Monopolistic Practices and Unfair Business Competition (KPPU’s Regulation No. 1/2019) that evidence that can be used is limited to 5 (five) pieces of evidence below, namely: witness statements, expert statements, letters and/or documents, instructions, and statements of the reported or business actor witnesses. In complex case investigations, expert witnesses are required. Expert witnesses may be proposed by business actors or by KPPU. Although there is no definite definition of an expert witness in monopoly and unfair business competition cases, it can be concluded that an expert here is a person who has expertise in the field of monopoly practices and business competition and understands the business sector carried out by the business actor under investigation.

Business actors and witnesses can provide documents to corroborate their position or statement. KPPU will receive all the submitted documents. KPPU will then provide an assessment of the document. Business actor documents are considered to have objective characteristics; thus, these documents have special evidentiary powers in cases of monopoly and business competition [38].

Furthermore, it relates to evidence of instructions being important in proving business competition cases. Instructions can be used as evidence if they are compatible with other instructions or are consistent with the actions or agreements that are suspected of violating Law Number 5/1999. An instruction obtained in written form has the same power of proof as a letter or document. The use of directive evidence in business competition cases cannot be generalized and is determined on a case-by-case basis [39].

According to Article 57 paragraph (1) of KPPU’s Regulation No. 1/2019, instructions are “...actions, events, or circumstances that, as a result of their agreement, either between one another or with agreements and/or prohibited activities and/or abuse of dominant position according to the provisions of the law, indicate that an agreement and/or prohibited activity has taken place and/or abuse of dominant position and who is the perpetrator.”

Furthermore, KPPU’s Regulation No. 1/2019 specifies in Article 57 paragraph (2) that evidence of instructions can be in the form of economic evidence and/or communication evidence that the Commission Council believes to be factual. Article 57 paragraph (3) of KPPU’s Regulation No. 1/2019 states that economic evidence is “...the use of economic arguments supported by quantitative and/or qualitative data analysis methods and results of expert analysis, all of which aim to strengthen allegations of monopolistic practices and/or unfair business competition.” It is defined in Article 57 paragraph (4) of KPPU’s Regulation No. 1/2019 as “...the use of data and/or documents indicating an exchange of information between parties suspected of committing monopolistic practices and/or unfair business competition.”

Grammatically, the phrase “can be” appears in Article 57 paragraph (2) of KPPU’s Regulation No. 1/2019. The legal implication is that the guiding evidence in question is not limited to economic and communication

evidence but can lead to other evidence as well. The proof of the business actor's witness is the same as witness statements, expert statements, and instructions, whose definitions are not included in Law Number 5/1999 but are found in KPPU's Regulation No. 1/2019. According to Article 87 paragraph (1) of KPPU's Regulation No. 1/2019, "*the statement of a business actor is a statement submitted by a business actor who is suspected of having violated the law in court.*" To argue for the use of a pricing algorithm as a form of price-fixing agreement, there are provisions regarding the minimum amount of evidence that must be met, in addition to being limited to the 5 (five) existing pieces of evidence.

This is strongly related to the concept of *bewijs minimum* (the minimum of proof). *Bewijs minimum* is the minimum evidence required in proof to bind the judge's freedom [40]. In business competition law, *bewijs minimum* requirement is two pieces of evidence [41]. This is based on the provisions of KPPU's Regulation No. 1/2019, Article 1 point 10, which states that "*sufficient evidence is the fulfillment of at least 2 (two) valid pieces of evidence.*" The legal purpose (*ratio legis*) of the rule of law is to protect human rights from the arbitrariness of examiners [42]. It is difficult to find hard evidence (witnesses, agreements, faxes, documents, and so on) in the context of using algorithms as a form of price-fixing agreement. It is possible that the evidence discovered is of a circumstantial nature, such as instructions, which can also be in the form of communication evidence and/or economic evidence. In the *status quo*, determining whether someone should enter into a price-fixing agreement depends solely on circumstantial evidence, and the response is simply yes or no. If you simply use economic or communication evidence, you obviously cannot respond with yes or no, as this violates *bewijs minimum* in Article 42 of Law Number 5/1999 *jo.* Article 45 of KPPU's Regulation No. 1/2019.

A plus factor (additional analysis) must be used when using circumstantial evidence. The several plus factors referred to are price fixing rationality, market structure analysis, performance data analysis, and/or analysis of the use of collusion facilities (facilitating devices). Because there is no hard evidence, the circumstantial evidence should be based on economic and communication evidence. Indeed, when referring to Article 57 paragraph (2) of KPPU's Regulation No. 1/2019, the phrase "and/or" is used, which is not cumulative, but it should be noted that the condition that occurred was that there was no direct evidence, so it is logical that the evidence really reflects the protection of human rights. Furthermore, the circumstantial evidence obtained is indeed strong, and there is no other evidence that can weaken it. This is consistent with the Decision of the Supreme Court Number 221 K/Pdt.Sus-KPPU/2016, which was corroborated by the Judicial Review level on Decision Number 167 PK/Pdt.Sus-KPPU/2017. In its consideration, it is stated that "*in business competition law, indirect (circumstantial) evidence is accepted as valid evidence as long as the evidence is sufficient and logical evidence, and there is no other stronger evidence that can weaken the indirect evidence.*"

The previous description can be used to analyze the proof of a price cartel using a price algorithm. In the absence of hard evidence, another element that can improve the use of circumstantial evidence to prove the use of the price algorithm as a form of price-fixing agreement is the expert's opinion. The expert's opinion, which is of course objective, will be assessed using current instructions connected to the algorithm to determine if it reflects a price-fixing agreement or not. For example, the algorithm of the business actor in question will be examined using the opinions of information and technology experts. Because two pieces of evidence, namely instructions and opinions of experts, have been obtained, it can also address concerns relating to *bewijs minimum* in Article 42 of Law Number 5/1999 *jo.* Article 45 of KPPU's Regulation No. 1/2019.

In competition law, instruction evidence is considered indirect evidence. This is also the case in other countries, such as Australia and the United States of America, where situational evidence (circumstantial evidence) can be used to determine whether there is an agreement (meeting of the minds) that is required in proving the existence of an agreement that violates competition law, such as instructions for parallel actions, instructions for concerted action, instructions of collusion, instructions of similar price structures (price-fixing), and so on [43].

Based on the description above, the way to prove the use of a price algorithm as a form of price-fixing agreement in the digital economy era is by using circumstantial or indirect evidence, which is in the form of a similar price structure and is corroborated by the opinions of experts. Of course, an objective expert will examine existing instructions connected to the algorithm to determine if they reflect a price-fixing agreement or not.

4. CONCLUSION

The existence of an algorithmic system provides business actors with information regarding the prices and preferences of potential customers for goods and services. If a price algorithm is used to commit collusion to set the same price in one relevant market with the argument or reason to adjust the price desired by consumers, this can result in unfair and uncompetitive business competition between business actors. According to business competition law, this situation has the potential to result in a price cartel, as defined in Article 5 of Law Number 5/1999.

From the perspective of proof, the use of the price algorithm as a form of price-fixing (price cartel) in the digital economy era of pricing cannot be carried out conventionally with the evidence available in Article 42 of Law Number 5/1999. Instead, circumstantial or indirect evidence in the form of communication and economic evidence, such as a similar price structure, is required. This evidence can be strengthened by an objective expert's witness to determine whether the price algorithm is a form of tacit agreement to carry out a price cartel or not.

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- [8] Komisi Pengawas Persaingan Usaha, *Hukum Persaingan Usaha: Buku Teks* (Jakarta: Komisi Pengawas Persaingan Usaha, 2017) p. 95.
- [9] Terry Hutchinson, 'The Doctrinal Method: Incorporating Interdisciplinary Methods in Reforming the Law', *Erasmus Law Review*, 2015, 130–38, <https://doi.org/10.5553/ELR.000055>.
- [10] Komisi Pengawas Persaingan Usaha, Putusan Nomor 167 PK/Pdt.Sus-KPPU/2017, 2017, p. 953.
- [11] Komisi Pengawas Persaingan Usaha, Putusan Nomor 167 PK/Pdt.Sus-KPPU/2017.
- [12] Zach Y. Brown and Alexander MacKay, *Competition in Pricing Algorithms*, 2019.
- [13] OECD, *A Roadmap Toward A Common Framework For Measuring The Digital Economy*. Saudi Arabia, 2020.
- [14] Brown and MacKay, p. 5.
- [15] The Competition and Markets Authority, Case 50223: Online Sales of Posters and Frames, 2016, p. 8.
- [16] The Court of Justice European Union, Case C-74/14: Eturas" UAB and Others v Lietuvos Respublikos konkurencijos taryba, 2016.
- [17] Michal S. Gal, "Algorithms As illegal Agreements", *Berkeley Technology Law Journal*, Volume 34 (2019): 99-105. DoI : <https://doi.org/10.15779/Z38VM42X86>.
- [18] Binoto Nadapdap, *Bukti Tidak Langsung versus Tembok Kartel*, Disertasi: Program Pascasarjana Universitas Indonesia, 2019, pp. 8-10. The efforts of the KPPU to use indirect evidence follow the efforts of the Organization for Economic Cooperation and Development / OECD (2006), which states that "...in cartel cases without direct evidence, it is essential to prove the existence of cartels reasonably by the accumulation of relevant facts established based on indirect evidence." Circumstantial evidence, according to KPPU's Regulation Number 4 of 2011 concerning Guidelines for Article 5 (Pricing) of Law Number 5/1999, is a form of evidence that does not directly declare that there is an agreement on price-fixing. Indirect evidence can be used as evidence against the occurrence of a condition that can be used as an allegation of the enforcement of an unwritten agreement. Indirect evidence has the following forms: (1) communication evidence; (2) economic evidence. To determine whether there is a violation of business competition law, especially the practice of price-fixing, and to determine who is responsible for the violation, is a field of study in business competition law. The problem of using indirect evidence in Indonesia is still being debated because there is a Court Decision that cancels the use of indirect evidence, considering the Decision of the Central Jakarta District Court Case No. 01/KPPU/2002/PN.Jkt.Pst dated July 25th, 2002, and the second case, Decision No. 02/KPPU/2002/Pn.Jkt.Pst dated July 25th, 2002. KPPU's Decision No. 03/KPPU-I/2002, dated May 30th, 2002, concerning *Cases of Sale of Shares of PT*.

Indomobil Success International was invalidated by these two decisions of the Central Jakarta District Court. KPPU used indirect evidence for the first time, specifically concerted actions. Meanwhile, there is also a Court Decision that justifies the use of indirect evidence in tender cases. The Supreme Court Cassation Decision No. 906 K/Pdt.Sus/2010 dated February 11th, 2011, allowed the KPPU's request for cassation against the Tanjung Pinang District Court Decision No. 05/Pdt.Bth/2010/PN.TPI dated May 19th, 2020, which invalidated the KPPU Decision No. 12/KPPU-L/2009 dated January 7th, 2010. The Indonesian legal system does not recognize any other evidence other than the evidence specified in Article 184 paragraph (1) of the Criminal Procedure Code, which was amended by Law Number 5/1999 to include witnesses, experts, letters and documents, instructions, and statements of the reported party. Nonetheless, KPPU included "economic evidence" and "communication evidence" as "part" of the evidence.

- [19] Holmes Oliver W., "The Path of the Law", *Harvard Law Review*, (1897): 457
- [20] See, Article 43 of Law Number 5/1999 *jo.* KPPU's Regulation Number 1 of 2019 Regarding Procedures for Handling Cases of Monopolistic Practices and Unfair Business Competition (KPPU's Regulation No. 1/2019)
- [21] Andi Fahmi Lubis, dkk, *Hukum Persaingan Usaha (Buku Teks Edisi Kedua)*, Komisi Pengawas Persaingan Usaha, Jakarta, 2017.
- [22] Udin Silalahi, Orasi Ilmiah Pengukuhan Guru Besar Ilmu Hukum: Persaingan Usaha di Era Ekonomi Digital, Jakarta: Universitas Pelita Harapan, 2022, p. 6
- [23] Flores L., *How to measure digital marketing: Metrics for Assessing the impact and designing success*, Palgrave Macmillan, London, 2014, pp. 26-27. The digital market is a market whose contents are marketplaces based on internet networks and television markets such as news or digitalized television, and all digital market activities are based on the exchange of information.
- [24] Machado dan Davim, *MBA: Theory and Application of Business and Management Principles*, Springer International Publishing, Switzerland, 2016, p. 38.
- [25] Udin Silalahi, *op.cit.*, p. 7. Digital market intensification using AI should be assessed as the direction of development of Law Number 5/1999 because market conditions at the time the law was enacted differed from market conditions in 2022.
- [26] Muhammad Rifky Wicaksono, "Merger GoTo Bahaya Dataopoli", <http://m.mediaindonesia.com/opini/478375/merger-goto-dan-bahaya-dataopoli>, accessed 23 March 2022. According to Muhammad Rifky Wicaksono, the acquisition of GoTo does not result in unfair business competition practices because they do not compete in the same market, but the GoTo Group companies, as a multi-sided platform, can enable GoTo to close market access because Gojek offers services such as fintech. Gojek can block Gopay's competitor's access to providing fintech services on Tokopedia to increase Gopay's market share.
- [27] Taufik Ariyanto, "Posisi Dominan dalam Era Big Data" dalam Buku Dua Dekade Penegakan Hukum Persaingan, Komisi Pengawas Persaingan Usaha, 2021, p. 332
- [28] Demchenko, Yuri, "Data as Economic Goods: Definitions, Properties, Challenge, Enabling Technologies For Future Data Markets", *Itu Journal: ICT Discoveries, Special Issue*, No. 2 (2018): 23-24
- [29] *Ibid.*, p. 24
- [30] Suyanto, *Data Mining Untuk Klasifikasi dan Klasterisasi Data*, Informatika, Bandung, 2019, p. 2. Big data has four characteristics: being very large, very diverse, having a high growth rate, and being very unclear. However, big data can be analyzed to help companies make better strategic business decisions.
- [31] Taufik Ariyanto, *Op.Cit.*, hlm. 333
- [32] Bruno Lasserre and Andreas Mundt, "Competition Law and Big Data: The Enforcer's View, *Antitrust and Public Policy*, Vol. 4, hlm. No. 1 (2017): 90 (DoI: 10.12870/iar-12607). Data can be a factor contributing to market power. Access to data is important for competing in markets. The possession of access to data can be a barrier to market entry if new entrants are unable to acquire similar data or buy access to the same sources of such data as incumbents.
- [33] https://www.bundeskartellamt.de/DE/Wettbewerbsregister/RechtlicheDokumente/RechtlicheDokumente_node.html, accessed 15 April 2021.
- [34] <https://algorithmwatch.org/en/competition-authorities-ready-for-price-fixing-algorithms/>, accessed 19 April 2021. Although *Bundeskartellamt* has yet to define digital markets, it has begun to sanction major digital platforms like *Booking.com* and *Amazon* for unfair pricing and conditions. According to *Bundeskartellamt*, there are many factors that contribute to anti-competitive behavior. These factors include market access and big data, as well as the influence of internet networks, specific pricing, and brand acquisition.
- [35] Shearman & Sterling, *Artificial Intelligence and Algorithms in Cartels Case: Risk in Potential Broad Theories of Harm, Perspectives*, April 16, 2018.

- [36] Peter Setiawan, Xavier Nugraha, and Michael Enrick, 'Analisis Kedudukan Keterangan Korban Terkait Kejahatan Terhadap Harta Kekayaan Dalam Lingkungan Keluarga: Sebuah Antinomi Antara Hukum Materil Dengan Formil', *Al-Daulah: Jurnal Hukum Pidana Dan Ketatanegaraan*, 2020.
- [37] Eddy O.S. Hiariej, *Teori & Hukum Pembuktian*, Jakarta: Erlangga, 2012.
- [38] Knud Hansen, et. All op.cit, p. 395.
- [39] Ibid. p. 395.
- [40] M. Yustia A., 'Pembuktian Dalam Hukum Pidana Indonesia Terhadap Cyber Crime', *Pranata Hukum*, 5.2 (2010), 77–90.
- [41] Ni Putu Indah Amy Candradevi and I Ketut Mertha, 'Penggunaan Alat Bukti Tidak Langsung Dalam Proses Pembuktian Dugaan Praktik Kartel Di Indonesia Oleh Komisi Pengawas Persaingan Usaha', *Kertha Wicara*, 7.1, 2018.
- [42] Rishma Yuristia, 'Pengaruh Putusan Mahkamah Konstitusi Nomor 21/PUU-XII/2014 Terhadap Pengajuan Praperadilan Mengenai Penetapan Status Ongky Syahrul Ramadhona Sebagai Tersangka', *Jurnal Verstek*, 2016.
- [43] Tery A dan Giugni D, *Business, Society and the Society*, Harcourt Brace dan Company, Australia, 1997.

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