NAVIGATING JUSTICE AND LEGAL EQUILIBRIUM IN AUTOMATIC PRICING ALGORITHMS: A CROSS BORDER LEGAL APPROACH

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Abstract
Automatic pricing algorithms with artificial intelligence (AI) technology in e-commerce have a significant impact on the running of the industry. This creates benefits as well as reaps polemics. Discrimination against consumers is one of them. For this reason, comprehensive treatment is needed to prevent negative impressions from occurring and can lead to the creation of justice and fairness. This research is normative qualitative research with the support of case and comparison approaches. The research results show that the algorithm uses AI to set prices based on market factors, production costs, and competition, providing price flexibility, price relevance, and increased business efficiency. Positive impacts include increased efficiency, price relevance, and consumer reach, while negative impacts involve the risk of discrimination and supervisory difficulties. Regulation and supervision are needed to maintain justice and legal balance. Unfair competitive practices, such as sudden price fluctuations, need to be monitored. Explicit regulations are needed to address the gap between AI developments and the existing legal framework. The implementation of automatic pricing algorithms must pay attention to aspects of justice and legal balance.

Keywords: Artificial Intelligence; Automatic Pricing Algorithms; e-Commerce; Unfair Competition

A. Introduction
E-commerce has become an integral component of contemporary civilization. Due to its simplicity and accessibility, e-commerce has emerged as the primary preference for individuals to engage in shopping. The adoption of AI-powered automatic pricing algorithms is a key driver of the expansion of e-commerce. Automated pricing algorithms utilize data and analysis to autonomously establish product prices.¹ Implementing this strategy can yield advantages for e-commerce enterprises, as it enables them to maintain competitiveness and enhance sales.

Ideally, the use of automatic pricing algorithms provides many benefits, such as increasing the efficiency of sales strategies in e-commerce.² Shopee, Tokopedia, JD.ID, Blibli, and Lazada are the examples of e-commerce that use Automatic Pricing Algorithms with AI

technology. However, as it turns out into practice, the implementation of automatic pricing algorithms also raises several challenges, one of which is related to justice and legal balance. Automated pricing algorithms have the potential to perpetuate consumer discrimination by enabling the establishment of varying prices for different individuals.\(^3\) In addition, automated pricing algorithms can potentially foster detrimental competition, as they can be employed to manipulate market prices. Hence, a comprehensive examination is required about the principles of fairness and equitable distribution in the implementation of automated pricing algorithms utilizing artificial intelligence technology in e-commerce.

The notion of justice and legal equilibrium is a fundamental concept that must be maintained in all aspects of life, including the implementation of AI-powered automatic pricing algorithms in e-commerce.\(^4\) Conducting this study is crucial to ensure the equitable application of autonomous pricing algorithms without causing harm to customers or other e-commerce stakeholders. Justice entails the equitable treatment of all consumers, irrespective of their diverse backgrounds. Legal balance refers to the requirement that computerized pricing algorithms be applied in a fair manner, without causing harm to consumers or other participants in the e-commerce industry.

Undoubtedly, the utilization of AI-powered automatic pricing algorithms can result in discrimination against consumers, since it enables the establishment of varying rates for various individuals. For instance, automated pricing algorithms can be employed to provide elevated costs to users based on their country of origin or the type of gadget they use. Such discrimination can have detrimental effects on consumers, since it can restrict their ability to avail themselves of the items or services being provided.

Automatic pricing algorithms pose significant risks to corporate competition, particularly in the e-commerce sector. Regarding empirical evidence, a study undertaken by Aqshal et al in 2020, it was discovered that in addition to the risk of personal data being misused, automatic pricing algorithms could also amplify the likelihood of dominating positions being exploited.\(^5\) This tendency is further supported by Enni’s research in 2022, which reveals that despite the numerous advantages it offers, algorithms frequently exhibit prejudice in practice. This bias can result in harm to consumers and contribute to unequal access to services or products. To summarize, computerized pricing algorithms have the potential to result in discrimination, unfairness, and even collusion, despite their widespread popularity and diverse applications.\(^6\)

Joko Widodo, the President of Indonesia, emphasized the significance of Indonesia's role in the global Artificial Intelligence (AI) arena. He stressed the necessity for the country to not only rely on foreign technology, but also to actively develop AI that brings advantages to its citizens and the international community.\(^7\) The remark pertains to a worldwide pattern in which the utilization of AI in various industries is projected to enhance production efficiency by as much as 40% by the year 2023. Furthermore, certain countries have already integrated AI

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\(^7\) B. Sugianto and Sustika, R., 2016, October. Data classification for air quality on wireless sensor network monitoring system using decision tree algorithm. In 2016 2nd International Conference on Science and Technology-Computer (ICST) (pp. 172-176). IEEE.
into their industrial sector, reaching a utilization rate of 56%. While the Agency for the Assessment and Application of Technology (BPPT) has released the National Strategy for Artificial Intelligence for Indonesia 2020-2045, it is important to acknowledge that this policy remains broad in scope and lacks specific guidelines for the deployment of AI.\(^8\) The remark pertains to a worldwide pattern in which the utilization of AI in various industries is projected to enhance production efficiency by as much as 40% by the year 2023. Furthermore, certain countries have already integrated AI into their industrial sector, reaching a utilization rate of 56%. While the Agency for the Assessment and Application of Technology (BPPT) has released the National Strategy for Artificial Intelligence for Indonesia 2020-2045, it is important to acknowledge that this policy remains broad in scope and lacks specific guidelines for the deployment of AI.

In addition, the utilization of automated pricing algorithms can potentially foster detrimental competition, as it has the potential to manipulate market prices. For instance, automated pricing algorithms can be employed to abruptly raise product prices or deceptively reduce product prices. This unhealthy rivalry might have adverse effects on other e-commerce enterprises, since it can create challenges for them in terms of competition. Hence, it is imperative to establish regulations that can ensure fairness and legal equilibrium in the use of AI-powered automatic pricing algorithms in the realm of e-commerce. This rule is crucial for safeguarding consumers and e-commerce enterprises against unjust practices. Implementing AI-powered automatic pricing algorithms in e-commerce has the capacity to enhance operational efficiency and overall effectiveness.\(^9\) Nevertheless, the use of automated pricing algorithms presents other obstacles, including those pertaining to fairness and legal equilibrium. Hence, comprehensive research and suitable rules are necessary to guarantee fairness and legal equilibrium in the implementation of AI-powered automatic pricing algorithms in the field of e-commerce.

This paper will specifically analyze the execution of justice and legal equilibrium in the utilization of automated pricing algorithms, particularly in the realm of electronic commerce. This article will also provide a comparative examination of legislation in other nations regarding the deployment of automated pricing algorithms. The article is structured into three subsections for further discussion. Initially, assessing the standard characteristics of Artificial Intelligence and its significance in relation to the utilization of automated pricing algorithms. Furthermore, the difficulties faced by law enforcement in relation to the utilization of artificial intelligence in the e-commerce sector. Conduct a comparative study on the provisions for applying AI technology-based automatic pricing algorithms, which is currently a global trend.

This research employs a normative qualitative research methodology, utilizing a case and comparison approach by comparing provisions regarding AI technology based for algorithm pricing in European Union and United States as both of the states are currently leading-states on AI development. The study employs a qualitative methodology to obtain a comprehensive comprehension of the facets of justice and legal equilibrium in relation to the use of automated pricing algorithms on e-commerce platforms. The research will focus exclusively on examining the issues of fairness and legal equilibrium that arise from the utilization of automated pricing algorithms in the field of e-commerce. The collection of legal materials is conducted by literature research. The primary material sources in this research are journals, documents, online media, and news.


B. Discussion

An automatic pricing algorithm is a system that employs artificial intelligence (AI) technology to autonomously ascertain the price of a product or service. This system functions by employing many aspects, such as market demand, production costs, and market rivalry. Automated pricing algorithms possess distinct features that set them apart from conventional pricing approaches. Firstly, its real-time functionality enables swift adjustments of product or service prices in response to shifting market conditions. Furthermore, this algorithm offers the benefit of broader consumer coverage, as it may be implemented across several e-commerce platforms. This offers broader possibilities for accessing the market and fine-tuning prices with more accuracy.

In addition, the three automatic pricing algorithms have the advantage of enhancing efficiency and effectiveness in the process of setting prices for businesses. By employing precise data analysis and gaining a comprehensive comprehension of the variables that impact prices, firms may enhance their decision-making process, maximize revenues, and promptly adapt to market fluctuations. Automated pricing algorithms offer both enhanced price flexibility and strategic advantages by leveraging AI technology in the pricing process, hence boosting competitiveness and business performance. The use of automated pricing algorithms has a substantial influence on business operations, yielding both favorable and unfavorable outcomes that necessitate careful evaluation.\textsuperscript{10}

\textbf{Figure 1. Positive and Negative Impact of Automatic Pricing Algorithms}

Automated pricing algorithms offer advantages in terms of operational efficiency and overall effectiveness. By employing rapid and automated data analysis, organizations can establish prices with greater accuracy, enhance profitability, and circumvent human errors throughout the pricing procedure.\textsuperscript{11} Along with that, computerized pricing algorithms have the capability to alter prices in real-time, hence enhancing the accuracy of price relevance to market conditions. This enables commercial entities to promptly adapt to market fluctuations, ensuring that product or service prices may stay competitive and pertinent. Finally, automated pricing algorithms allow businesses to expand their consumer base by deploying dynamic pricing systems on several e-commerce platforms. This fosters adaptability in price adjustments and expands the scope of commercial prospects.\textsuperscript{12}

Nevertheless, the utilization of automated pricing algorithms also entails adverse consequences. Initially, this approach facilitates the occurrence of discrimination against consumers as algorithms have the capability to categorize individuals according to specific

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Positive and Negative Impact of Automatic Pricing Algorithms
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\textsuperscript{10} Arsyah, \textit{Loc. Cit}
\textsuperscript{11} Miftahul Huda and M. Kom. \textit{Algoritma Data Mining: Analisis Data Dengan Komputer}. bisakimia, 2019.
\textsuperscript{12} Angga Aditya Permana, et. al., \textit{Artificial Intelligence Marketing (Padang; Global Eksekutif Teknologi}, 2023.
traits, such as their purchase patterns or demographic profile, and establish distinct prices for each category. This can lead to disparities and inequities in the availability of equitable pricing. The complexity and automation of automatic pricing algorithms pose a significant barrier in terms of monitoring. The complexity of emerging algorithms presents challenges for government supervision, since it requires a deep understanding and continuous monitoring to address potential dangers associated with transparency and accountability.\textsuperscript{13}

To ensure that the deployment of automatic pricing algorithms in e-commerce aligns with concepts of justice and legal balance, it is necessary to have appropriate regulation and monitoring, taking into account both the good and negative aspects. The utilization of automated pricing algorithms not only affects the operational efficiency and efficacy of businesses, but can also result in detrimental consequences such as fostering unhealthy rivalry.\textsuperscript{14} These algorithms can be utilized to manipulate market prices, undermine competitors, and lead to unethical practices. Multiple instances of detrimental competition can be observed in the implementation of automated pricing algorithms.\textsuperscript{15}

Initially, implement an abrupt increase in prices. An e-commerce platform can employ automated pricing algorithms to significantly raise product prices upon detecting a surge in demand or specific circumstances, such as news events or particular trends. This may appeal to price-conscious consumers and provide additional profits for the corporation, but it may be perceived as unjust by some consumers. In addition, engaging in the deliberate reduction of prices. In contrast, e-commerce platforms might employ algorithms to abruptly decrease product prices, even below the costs of manufacturing, in order to inflict harm on competitors or provide a deceptive perception of the product's worth. This technique has the potential to inflict damage upon competing enterprises and generate market instability.

On top of that, employing customer data to control pricing. Automated pricing algorithms have the ability to use consumer data, such as geography or buying habits, to modify prices in a biased way. For instance, offering elevated pricing to customers residing in regions with more buying capacity or those who have demonstrated impulsive shopping inclinations. This not only leads to pricing disparity, but also entails substantial privacy vulnerabilities. In addition, discrimination may also arise in the implementation of automated pricing algorithms.

\textbf{Figure 2. Discrimination in Automatic Pricing Algorithms}

![Discrimination in Automatic Pricing Algorithms](image)

Firstly, discrimination that is predicated on geographical location. An e-commerce platform can utilize consumer location data to establish varying price points. For instance, implementing elevated pricing for customers residing in regions with greater income levels, without taking into account their specific financial circumstances. Furthermore, discrimination is predicated upon the type of gadget being used. Automated pricing algorithms have the


\textsuperscript{15} Hartono, \textit{Loc. Cit.}
capability to offer varying costs depending on the specific gadget utilized by consumers. This could potentially disadvantage consumers who utilize specific devices by subjecting them to inflated rates without any discernible justification. Finally, discrimination based on behavior. Regular shoppers on a platform may face elevated prices in comparison to infrequent shoppers. This could be deemed inequitable for steadfast consumers and potentially inflict long-term harm upon them. These two instances exemplify the intricacies and difficulties involved in establishing automated pricing algorithms. Such algorithms necessitate meticulous policies and supervision to guarantee the preservation of fair competition and the prevention of discrimination.

Moreover, Artificial Intelligence (AI) has permeated diverse areas in daily life, including e-commerce, healthcare, legal, and political domains, demonstrating its essential role in multiple societal disciplines. In 2019, Ashshidi explained that AI is undergoing evolution in three distinct levels. Artificial Narrow Intelligence (ANI) refers to a type of AI that is characterized by its limited capabilities and restricted scope. Furthermore, Artificial General Intelligence (AGI), also referred to as Strong AI, possesses capabilities that are on par with those of humans. Artificial Super Intelligence (ASI) is a type of AI intentionally designed to exceed human capabilities. Presently, artificial intelligence remains in the artificial narrow intelligence (ANI) phase, indicating that this technology is still under human control. Nevertheless, AI has the capacity to surpass human talents in terms of development, enabling it to execute tasks autonomously, without any human guidance.\(^\text{16}\)

In the legal framework of Indonesia, Law no. 19 of 2016, which amends Law no. 11 of 2008 on Electronic Information and Transactions in e-commerce (UU ITE), includes Article 1 number 8. This article defines an Electronic Agent as a device within an electronic system designed to autonomously perform a specific action on electronic information owned by an individual. Currently, AI can be regarded as an electronic agent since it is still controlled by an individual who desires a specific outcome through the usage of AI. Nevertheless, in the event that AI progress attains a level where it may outperform human acts, it may become necessary to revise the definition outlined in Article 1 point 8 of the ITE Law in order to adequately address the role and governance of AI in Indonesia. The exponential growth of Artificial Intelligence (AI) technology has posed regulatory problems within the framework of the Law on Information and Electronic Transactions in e-commerce (UU ITE) in Indonesia. An issue that arises is the discrepancy between the advancement of AI technology and the extent of current rules. For instance, the current ITE Law does not explicitly delineate the permissible behaviors that AI can undertake without explicit instructions from human beings.\(^\text{17}\)

The challenges associated with developing the Pricing Algorithm (AP) become progressively intricate as well as diverse. While AP can bring about favorable outcomes, such as enhanced efficiency and precision in price setting, its implementation can also give birth to three significant issues: the exploitation of personal data, the misuse of price discrimination, and the misuse of dominant position. The possibility for the improper use of personal data is a significant concern associated with the utilization of artificial intelligence in the realm of corporate rivalry.\(^\text{17}\) These algorithms gather and evaluate diverse information, such as consumer personal data, in order to ascertain product costs.

The OrbitzWorldWide instance in the United States exemplifies the company's ability to provide distinct pricing options to Mac and non-Mac users by analyzing their hotel-related behavior. In Indonesia, the use of personal data is regulated by laws such as the Regulation of


the Minister of Information Communication on Protection of Personal Data in Electronic Systems (Permenkominfo PDPDSE). These regulations aim to restrict the use of personal data to only what is authorized by the data owner's agreement. Furthermore, the possible issue of pricing discrimination is a significant concern that may occur throughout the execution of AP. These algorithms employ consumer-specific data to automatically determine pricing, enabling the implementation of price discrimination practices that are prohibited by certain legislation. While Article 6 of the Business Competition Law in Indonesia explicitly forbids business entities from engaging in price-fixing agreements with their competitors, it is important to note that this prohibition only applies to agreements made with other business entities and does not encompass individual discriminatory activities by AP. Nevertheless, the Consumer Protection Act can offer safeguards against price discrimination that is rooted in an individual's sensitive data.

The instances of The Princeton's Review and Netflix serve as evident illustrations of the exploitation of price discrimination, wherein sensitive data such as ethnic background is utilized to ascertain the price of services. In addition to contravening the tenets of commercial rivalry, this action may also infringe upon the ban of discrimination stipulated in the Consumer Protection Law. Hence, the utilization of AP in commercial operations can provide significant potential challenges, particularly with privacy and pricing differentiation. Ensuring the safeguarding of personal data and implementing policies that restrict the improper use of individual information are crucial in mitigating the adverse effects of Pricing Algorithms. Furthermore, it is imperative to conduct additional research on the regulatory framework pertaining to corporate competition and consumer protection. This is necessary to guarantee that technical advancements like AP do not adversely affect consumers or contravene the principles of equitable competition.

**AI and the Future of Law Enforcement in E-Commerce**

Law enforcement can be influenced by various elements, such as legal considerations, law enforcement practices, infrastructure, societal norms, and cultural influences. Legal aspects encompass the statutes and rules that govern certain matters. The Law on Information and Electronic Transactions in e-commerce (UU ITE) is a legal framework that governs electronic transactions in e-commerce and related issues in the realm of cyberspace within the field of information technology. The integrity and capability of law enforcement factors, such as police, prosecutors, and courts, are crucial in addressing issues pertaining to online. Community factors encompass the requirements of the community for regulation and law enforcement within the realm of cyberspace. Conversely, cultural aspects pertain to the impact of societal culture on the evolution of laws.

The presence of Artificial Intelligence (AI) necessitates the consideration of facilities and infrastructure aspects as vital components in the execution of law enforcement. AI is seen as a tool or apparatus that can assist law enforcement in executing their responsibilities. For instance, the utilization of e-ticketing has shown to be a successful application of artificial intelligence in the field of law enforcement. E-tickets are not only efficient in ensuring compliance with traffic regulations, but also serve as a deterrent against other illicit activities, such as bribery of law enforcement personnel. Hence, the utilization of AI technology within the realm of law enforcement can enhance the efficiency and efficacy of legal procedures, through the utilization of contemporary and advanced facilities and infrastructure.

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19 Köchling, *Loc. Cit*.
The implementation of law enforcement using a system or instrument, such as Artificial Intelligence (AI), exhibits notable distinctions from law enforcement conducted by humans. Riki Perdana Waruwu asserts that a judge is tasked with the duty of dispensing three distinct forms of justice during case proceedings: legal justice, moral justice, and social justice. Conversely, Abdurrahman Rahim contends that AI is incapable of offering advantages in the realm of law enforcement due to its incapacity to take into account fairness, dispense justice, or weigh the benefits in a given situation. AI cannot supplant the function of a judge due to its deficiency in human-like cognitive abilities, such as emotions, intentions, and conscience.

The justice rendered by AI is inflexible and disregards whether it aligns with the values of humanity or conscience. Hence, the reliance on gadgets or tools such as AI for making decisions in a case is not entirely dependable. Artificial Intelligence (AI) possesses distinct attributes in automating information processing, rendering it classifiable as a "Electronic Agent" according to Indonesian regulations. According to Article 1 of the ITE Law, a "Electronic Agent" is defined as a device within an electronic system that is designed to automatically perform a specific action on certain Electronic Information, and is controlled by a person. The inclusion of the term "automatic" in this definition of a "Electronic Agent" forms the foundation for asserting that AI can be classified as a "Electronic Agent." This framework enables the regulations pertaining to "Electronic Agents" to be extended to artificial intelligence (AI) as well. Article 21 of the ITE Law provides guidelines for the use of electronic agents in the execution of electronic transactions in the field of e-commerce. Within the framework of the ITE Law, operators of electronic agents are essentially regarded as operators of electronic systems, as electronic agents constitute a component of electronic system operators. Hence, the rights and responsibilities that pertain to operators of electronic systems typically extend to operators of electronic agents as well.

Every electronic system operator must guarantee the security, dependability, and accountability of the systems under their management. The Electronic Agent organizer bears full legal responsibility for all outcomes arising from activities performed by electronic agents, except in cases where user negligence is the source of errors or system breakdowns. Nevertheless, the prevalence of artificial intelligence in science fiction frequently muddles our comprehension. There is uncertainty over the accountability of an AI for its activities, and the party accountable for significant financial losses resulting from the AI's decision-making. The ITE Law stipulates that the utilization of AI in Indonesia is restricted to individuals, government officials, corporate entities, and the general public. Consequently, the legal liability will rest upon electronic system operators who offer AI services.

The ITE Law and PP 71/2019 impose restrictions on the obligations and responsibilities of Electronic Agent organizers. These include the duty to uphold data confidentiality, regulate user personal data, ensure user privacy, and furnish information regarding the system used to prevent harm to users. Consequently, the legal framework has thoroughly governed the obligations of organizers of Electronic Agents, such as AI, in the context of carrying out electronic transactions in e-commerce.

Electronic agents, such as AI, can be understood as e-commerce intermediates with the ability to track electronic information. In the realm of Indonesian e-commerce trade law, the notion of a "intermediary trader" is founded upon a "last moving" agreement or a "conveyancing agreement." According to Prof. Agus Sardjono, this assignment agreement pertains to an agreement that authorizes someone to act on behalf of the person granting the permission. In the

23 Cohen, Loc. Cit
24 Law Number 19 Year 2016 about Information and Electronic Transaction
25 Government Regulation Number 71 Year 2019 about Implementation of Electronic Systems and Transactions
context of defining the "merchant in e-commerce intermediary," the term "Agent" is commonly employed to denote the individual or entity who receives the authority granted through a power of attorney. When considering AI as an Electronic Agent, it aligns with the definition of an electronic agent in the ITE Law. According to article 1 of the ITE Law, an electronic agent refers to a person who has the authority to control devices within an electronic system to carry out automated operations on specific Electronic Information. Therefore, the individual who runs the electronic system equipment is regarded as a legal entity who is obligated by legal accountability. Within the realm of AI as an Electronic Agent, the individual responsible for managing the electronic agent assumes the role of the power of attorney recipient (agent) from the owner of the electronic information (principal). This arrangement grants the agent indirect authorization to handle and manipulate the electronic information.

The issue of abusing a dominant position is highly significant in the economic context, particularly within the e-commerce sector. From an economic standpoint, dominant position refers to the position of a corporation that holds a commanding market share. For instance, E-commerce in the United States is recognized as the leading competitor in the e-commerce industry, despite its market share not yet surpassing 50%. According to Article 25 paragraph (2) of the Business Competition Law, a firm is deemed to have a dominating position if it possesses 50% or more of the market share for a certain good or service. Nevertheless, many interpretations permit a company to hold a dominant position even if it falls short of the 50% threshold, contingent upon the extent of market share control exerted by other competitors.

While the law does not outrightly forbid dominant positions, it does ban them when they are acquired through unfair, dishonest, and illegal means. The use of excessive market power can destabilize market equilibrium and adversely affect consumers. In Indonesia, the potential for unfair competition due to automatic pricing algorithms is a relevant concern given the country's rapidly growing digital economy and the increasing use of advanced technologies in business practices. These algorithms may enable collusion and price fixing, resulting in artificially high prices that harm consumers. Established companies can leverage sophisticated pricing algorithms to maintain market dominance, making it challenging for smaller or newer businesses to compete effectively. Additionally, dynamic price discrimination may lead to unfair treatment of certain consumer groups and exacerbate existing inequalities. The use of automatic pricing algorithms could also result in limited consumer choice due to uniform or closely aligned pricing strategies among businesses. Moreover, these algorithms can create barriers to entry for new competitors, stifling competition and innovation.

Article 25 of the Corporate Competition Law establishes certain constraints on the exercise of a dominating position that must not be infringed upon by corporate entities. These restrictions include setting trade terms, imposing market limitations, and impeding competitors. Within the realm of e-commerce, this corporation is being confronted with allegations of engaging in abusive practices to maintain a strong market position. A investigation conducted by The European Commission reveals that E-commerce purportedly exploits the personal data of third-party businesses on its platforms for its own strategic advantage.

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27 Ashshidqi, Loc. Cit.
Beyond that, there is a specific instance that reinforces the claimed exploitation of a dominating position, which pertains to the E-commerce industry and Fortem, a company specializing in the production of baggage. It is said that E-commerce illicitly exploited its rivals’ data to replicate Fortem products and introduce them at reduced rates, so suppressing competition and replacing Fortem from the market. Through the implementation of the Pricing Algorithm (AP), E-commerce can optimize its earnings by reducing the cost of its items and gaining a competitive advantage over its rivals. Hence, the exploitation of a prevailing market position by enterprises like E-commerce engenders disparities in business rivalry and has the potential to detrimentally impact customers and other market participants. Stringent laws and vigilant oversight of these corporate practices are needed to sustain a fair and robust market.

**AI-Based Automatic Pricing Algorithms in E-Commerce: A Comparative Study**

Regulations and norms enforced by specific countries play a crucial role in maintaining fairness and legal equilibrium when deploying AI-powered automatic pricing algorithms in e-commerce. The Federal Trade Commission (FTC) in the United States prioritizes transparency and accountability when it comes to the utilization of automated pricing algorithms. The FTC offers recommendations to ensure consumer protection and the prevention of discrimination. In the European Union, the General Data Protection Regulation (GDPR) establishes a framework for governing the utilization of personal data in automated decision-making processes, such as automated pricing algorithms. Its purpose is to guarantee adherence to privacy and human rights norms. The Financial Services Authority (OJK) in Indonesia is responsible for producing a code of ethics guidance for artificial intelligence (AI) in the financial technology business, which aims to promote responsibility and trustworthiness.

Table 1. Differences in Automatic Pricing Algorithm Provisions in Indonesia, the European Union and the United States

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<tr>
<td>Objectives</td>
<td>Establish ethical and responsible standards in the use of AI</td>
<td>Protection of personal data in European Union countries</td>
<td>Prevention of misleading and unfair business practices in the US</td>
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<tr>
<td>Main Focus</td>
<td>Ethics of using AI (Transparency, Fairness, Accountability)</td>
<td>Protection of personal data and data subject rights</td>
<td>Consumer protection and fair business competition</td>
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<td>Implementation</td>
<td>Technology industry and AI developments</td>
<td>Organizations that process European Union personal data</td>
<td>Business and trade practices in the United States</td>
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<td>Supervision</td>
<td>Industry organizations or associations</td>
<td>Data protection authorities in each member state of the European Union</td>
<td>US Federal Trade Commission</td>
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<tr>
<td>Sanction</td>
<td>It doesn't always have direct legal consequences, more about reputation and public trust</td>
<td>Heavy fines of up to 4% of global turnover or €20 million (whichever is greater)</td>
<td>Fines, court orders, and other legal actions</td>
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<td>Relation to Automatic Pricing Algorithms</td>
<td>Ethical guidelines in the development and implementation of algorithms</td>
<td>Data protection used by automatic pricing algorithms</td>
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<td>Case in Point</td>
<td>Code of ethics guidelines by AI implemented by companies or organizations</td>
<td>GDPR is a requirement for countries in the European Union</td>
<td>FTC regulations apply to cases such as fraud, false advertising, and monopoly</td>
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Source: Secondary Data, 2024 (Processed)

Table 1 presents a comparative analysis of the AI Code of Ethics Guidelines established by the OJK in Indonesia, the General Data Protection Regulation (GDPR) in the European Union, and the Federal Trade Commission (FTC) Regulations in the United States. The analysis focuses on their application to automated pricing algorithms. The three regulations have distinct objectives: the OJK prioritizes ethical norms and accountability in the utilization of AI, the GDPR emphasizes the safeguarding of personal data within European Union nations, and the
FTC concentrates on averting deceptive and unjust company activities in the United States. The three rules have distinct primary focuses. The OJK regulation centers on ensuring the ethical utilization of AI. The GDPR regulation centers on safeguarding personal data and upholding the rights of data subjects. The FTC regulation centers on safeguarding consumers and promoting fair business competition.

The application and oversight of these three regulations differ as follows: OJK applies to the technology industry and AI advancements, and it is supervised by industry organizations or associations. GDPR applies to organizations that handle personal data within the European Union, and it is overseen by data protection authorities in each member state of the Union. Europe is subject to the regulations of the European Union, while the United States follows the guidelines of the Federal Trade Commission (FTC) in matters of business and trade activities. The FTC is responsible for overseeing these practices within the United States. The consequences imposed by different regulatory bodies vary in their approach. The OJK places greater emphasis on maintaining reputation and public confidence, while the GDPR imposes substantial fines. In contrast, the FTC imposes fines, court orders, and other legal measures as penalties. The OJK, GDPR, and FTC all have an impact on automated pricing algorithms. The OJK offers ethical criteria for algorithm creation and implementation. The GDPR safeguards the data utilized by automated pricing algorithms. The FTC oversees fair and accurate pricing practices.

However, there are legal gaps in the OJK's guidelines that could be addressed by implementing aspects of FTC and GDPR regulations in Indonesia. For instance, the FTC emphasizes fair and accurate pricing practices, transparency, and consumer protection, which could enhance the OJK's guidelines by ensuring clear rules for pricing transparency, accountability, and fairness. This approach would provide stronger safeguards for consumers and businesses in Indonesia. Incorporating GDPR principles could bolster the OJK's focus on safeguarding personal data, aligning it more closely with the European standard of data privacy and security. This integration would help protect personal data used in automated pricing algorithms, minimizing the risk of misuse and unauthorized access. Additionally, adopting clear enforcement mechanisms and penalties similar to those used by the FTC and GDPR could strengthen OJK's regulatory power and ensure adherence to ethical and legal standards. By integrating FTC and GDPR principles, OJK can better protect consumers and businesses in Indonesia's technology landscape.

**Inequity in the Implementation of Automatic Pricing Algorithms with AI Technology in E-commerce: A Legal Landscape Analysis**

Designing automated pricing algorithms, it is crucial to consider factors of fairness and legal equilibrium. The objective is to mitigate prejudice against customers and safeguard against algorithmic exploitation by business entities. Implementing autonomous pricing algorithms requires a high level of transparency. Business entities must offer a concise elucidation of algorithmic functioning and its potential impact on pricing of products or services. The objective is to ensure that consumers comprehend the rationale behind establishing specific prices, hence avoiding consumer dissatisfaction or distrust of pricing procedures lacking transparency.

Government control is crucial as well. By implementing regulations, the government can oversee the utilization of automated pricing algorithms to guarantee the absence of any bias or unfair treatment towards customers. The government can exercise regulatory powers to verify that the algorithm is utilized impartially and in compliance with relevant legal norms. The

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government must establish explicit and comprehensive regulations to oversee the adoption of automated pricing algorithms. These regulations encompass a wide range of factors, such as transparency, control, and other elements pertinent to the principles of justice and legal equilibrium. Regulations provide business actors with explicit instructions for utilizing automated pricing algorithms, while the government obtains a legal foundation for enforcing principles of justice.

Several examples of discrimination that should be avoided in the implementation of automated pricing algorithms include setting higher prices based on criteria such as age, race, gender, or consumer's residential location. Effective regulation and control can help prevent such discriminatory practices and ensure that automated pricing algorithms are used with principles that are fair and ethical. The implementation of automated pricing algorithms using artificial intelligence (AI) technology in e-commerce has a significant impact on the aspects of fairness and legal equilibrium. The aspect of justice is a primary concern in this context, as pricing algorithms can automatically determine the price of a product without human intervention, thereby creating the potential for inequality.

Regarding equity, it is important to acknowledge that pricing algorithms have the potential to generate prices that may not always align with justice for consumers. Algorithms utilize several elements, including personal data, purchasing history, and customer preferences, to ascertain prices, which might result in price discrimination. This poses difficulties in guaranteeing equitable and uniform treatment of all consumers, in accordance with the norms of consumer law. It is important to take into account the many elements of legal equilibrium, particularly with regards to pricing strategies that may have detrimental effects on competitors or lead to market imbalances. Automated pricing algorithms have the potential to generate abrupt and unforeseeable price swings, posing a threat to small competitors and causing market instability. Hence, it is imperative to establish a transparent and comprehensive regulatory structure for overseeing and controlling the use of pricing algorithms in the realm of e-commerce, in order to mitigate any actions that may harm competitors or consumers.

According to that, the author's conclusion is that the Automatic Algorithm (AP) could be exploited by breaking the elements of unfair business competition, as outlined in Article 25 of the Business Competition Law. Initially, AP can be employed to establish terms of trade that hinder consumers from obtaining products from other companies. The situation of E-commerce serves as an example, wherein firms establish two requirements for third-party merchants and consumers. Initially, in order to engage in E-commerce, merchants are obligated to provide personal data as a prerequisite for selling on its platform. E-commerce utilizes the data to improve its offerings, employing AP as a determinant of prices. Furthermore, E-commerce establishes agreements with consumers on the utilization of their data (cookies) in order to steer consumers towards purchasing E-commerce products at prices that are cheaper than those of competing products.

More importantly, reckless utilization of anticompetitive practices might hinder new entrants from joining the market and even eradicate current competitors in an unfavorable manner. Once E-commerce obtains control of the data of sellers and buyers on its platform, it utilizes this data to create E-commerce items at more affordable costs compared to its rivals. This can have an indirect detrimental impact on existing competitors and act as a barrier for new competitors attempting to enter the market. Moreover, this study emphasizes the current deficiencies in the legal framework. The absence of explicit categorization of personal data can lead to ambiguity in the utilization of access points. Enhanced regulation is necessary to enable

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32 Ashshidqi, Loc. Cit
the efficient utilization of APs while safeguarding consumers' privacy rights. Furthermore, the ambiguity surrounding the jurisdiction in which personal data protection regulations are applicable may pose a challenge in cases when violations of data-related business competition occur outside the borders of Indonesia. This deficiency can have a detrimental effect, particularly due to the lack of complete regulation of personal data by the ITE Law, and the absence of cross-jurisdictional requirements in the Minister of Communication and Information Regulation on PDPDSE, which governs personal data.

Hence, it is imperative to implement heightened and all-encompassing regulations to tackle this matter and safeguard customers' private rights with greater efficacy. Ensuring a harmonious equilibrium between AI technology advancements in the field of e-commerce and safeguarding consumer rights and promoting fair competition is of utmost significance. Hence, it is imperative to establish a meticulous and stringent regulatory structure to guarantee that automated pricing algorithms do not infringe against the fundamental principles of equity and equilibrium within the realm of e-commerce.\textsuperscript{34} To ensure the integrity and longevity of the e-commerce industry powered by AI technology, it is crucial to prioritize monitoring, transparency, and adherence to regulatory regulations.

Various suggestions might be proposed to enhance fairness and ensure equitable implementation of autonomous pricing algorithms: Initially, it is imperative for the government to intervene by implementing regulations that restrict transparency in the utilization of automated pricing algorithms. This law may necessitate commercial entities to provide comprehensive elucidations regarding the functioning of algorithms and their influence on the pricing of products or services. This legislation enhances customer comprehension of the rationale behind specific pricing and mitigates any uncertainty in pricing methods. Besides, enhancing the efficiency of oversight. Ensuring the formation of balance and legal justice is crucial in using autonomous pricing algorithms to prevent customer losses. The government should actively oversee the use of autonomous pricing algorithms. The oversight can be conducted by governmental entities or autonomous organizations vested with the power to ensure the algorithm's equitable utilization and compliance with relevant legal tenets. Supervision is an essential measure to prevent the improper usage of algorithms that may have detrimental effects on customers.

Last but not least, it is essential for business entities to demonstrate a dedication to creating non-discriminatory automatic pricing algorithms. This algorithm should utilize criteria that are pertinent and impartial to consumer attributes that are immutable, such as age, race, gender, or residential location. Creating equitable and unbiased algorithms is a crucial measure to ensure fairness in pricing. As a result, while automatic pricing algorithms have the capacity to enhance efficiency and effectiveness in business, it is vital to have regulation, oversight, and dedication from corporate entities to guarantee their implementation is equitable and in compliance with relevant legal principles. These phases form the foundation for achieving the execution of an automated pricing algorithm that is transparent, unbiased, and equitable.

\textbf{C. Conclusion}

The utilization of AI-powered automatic pricing algorithms in e-commerce yields both substantial benefits and drawbacks. The main advantages include improved pricing efficiency and effectiveness, enhanced accuracy in reflecting market conditions, and a wider consumer base. This enables exact pricing, profit optimization, and informed decision making. The algorithm's capacity to adapt prices in real-time in response to market fluctuations enhances the significance of price relevance. Nevertheless, adverse consequences encompass the possibility of consumer discrimination and challenges in supervision. Including potential to unfair competition phenomenon. As these automatic pricing algorithms can enable collusion, price

\textsuperscript{34} Arsyah, \textit{Loc. Cit}
fixing, market dominance, dynamic price discrimination, and limited consumer choice. In order to surmount this issue, prudent regulation and monitoring are required. The government should enact regulations that govern transparency in the utilization of automated pricing algorithms and engage supervisory institutions. Regulations should specifically target potential hazards such as abrupt price volatility and the exploitation of customer data for the purpose of price manipulation. Ensuring regulatory flexibility in response to advancements in AI technology is crucial for maintaining equilibrium between innovation, safeguarding consumer interests, and promoting fair competition in the realm of e-commerce.

REFERENCES

A. Book

B. Journal


C. Regulation


Government Regulation Number 71 Year 2019 about Implementation of Electronic Systems and Transactions