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Development Of Regulations To Prevent And Address Algorithmic Bias In E-Commerce Competition Law

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Abstract

The study identified shortcomings in Law No. 5 of 1999 on algorithmic discrimination in the e-commerce business. The study employs normative legal methods, incorporating a legislative, conceptual, and algorithmic justice approach, as well as a comparative analysis of EU and US regulations. Secondary data, including ICC cases, were analyzed through literal, co-curricular, and teleological interpretations. This highlights the limitations of existing norms in addressing digital dynamics. Law No. 5/1999 does not have explicit regulations on automated algorithms, including definitions, transparency, or auditing of systems. Real cases, such as Shopee's internal delivery priority, harm small businesses through biased weighting factors, violating Article 19(d) and Article 25(1)(a). The first step is to mandate that major platforms disclose their algorithmic principles and conduct quarterly independent audits. Furthermore, strengthen ICC with technologists and data management rules. Long-term measures include international cooperation and the application of Pancasila-based ethics to achieve social justice, which is crucial for protecting SMEs in Indonesia's digital market, aligning with the global dominance of algorithms, and in line with ICC's principles aimed at combating AI collusion. Reform promotes healthy and inclusive competition.

Keywords Algorithmic Discrimination; Competition; E-commerce

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1. INTRODUCTION

According to Statista Market Insights, the number of PMSE users in Indonesia is expected to reach 196.47 million by 2023. This figure increased by 9.79% compared to the previous year, amounting to 178.95 million users. (Wahyuni et al., 2024) Economy Digital aims to increase GMV in e-commerce to USD 90 billion by 2024, making a significant contribution to GDP through transactions, E-commerce, and MSME inclusion in Digital. (V. Rahman, 2024) Meanwhile, in 2025, e-commerce transactions are projected to reach IDR 796 trillion, generating VAT taxes of IDR 79.6 trillion for the state. Tax revenue from PMSE has increased sharply from IDR 2.5 trillion in 2020 to IDR 3.5 trillion in 2021, demonstrating the significant potential for state revenue from the digital sector. (Tofan & Trinaningsih, 2022)

The number of e-commerce platforms that pay VAT increased from 51 in 2020 to 163 in 2023. Tax revenue jumped from IDR 731 billion to IDR 6.76 trillion, with a compliance rate of 92.6%. (Sukarno & Nurmandi, 2023) The digital economy contributed IDR 714 trillion to Indonesia's GDP in 2022. The target is to increase to IDR 1,700 trillion by 2025. (Abdillah, 2024) Indonesia is the fastest-growing economy in ASEAN for the digital sector. Every 1% increase in internet penetration adds US$640 million to GDP and creates 10,700 new jobs. (Nugroho & Hakim, 2023)

The complexity of PMSE business competition is increasing along with the emergence of algorithm technology. Algorithms are instruments for collecting data that are then used to achieve a specific goal. (Mustafa et al., 2025) In practice, algorithms tend to give display priority to sponsored products (Also Known as sponsored products) or those derived from sellers with high traffic. The algorithmic discrimination that favors large business actors reflects systemic biases.

A recommendation algorithm system using AI and Big Data to suggest products based on user history and behavior. However, this algorithm is not completely neutral. (EdelmanrevealsGeradimpact Research shows the influence of paid advertising, algorithmic discrimination bias that prioritizes the interests of platforms, and a lack of oversight in content curation. In addition, the practice of Dark Pattern Design, a System that misleads users for business gain, reveals an inequality between consumers and Digital Platforms.

One of the negative aspects of algorithms is that they can be used to match prices with those of competitors in a single market. In the current PMSE era, information about market conditions has become more transparent and accessible, including competitors' prices. Business actors can use algorithms to track the prices of competitors in the market, which then makes them a factor in setting product prices. From this, there is potential for algorithmic abuse in product pricing, which can result in a lack of price competition within the same market. (Bassiouni & Schabas, 2021)

Other forms of unfair business competition can also occur when algorithms are misused to manipulate consumers into directing them to specific business actors. (Wahyuningtyas, 2024) The use of algorithms in Home PMSEs must enable consumers to find products and/or services that suit their needs. However, these algorithms often do not provide objective recommendations for products that meet consumer needs. Consumers may be directed to specific products or merchants that may have been affiliated with or cooperated with Home mentioned above. So indirectly, the algorithmic system has discriminated against other traders. (Wahyuningtyas, 2024)

Algorithmic abuse can also have a direct negative impact on consumers, for example, personalized pricing practices (Personalized pricing). Active algorithm: Home WHO practices this approach by setting the price of products and/or services for each of its consumers based on a profile that has been created, thereby charging the maximum price that the consumer is willing to pay. This allows for price

differences to be set for consumers from one consumer to another, potentially resulting in price discrimination against certain consumers. (Kriswandaru et al., 2025)

Law No. 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition, the legal basis for business competition in Indonesia, regulates the prohibition of pricing agreements and discriminatory practices. The prohibition of price fixing agreements is contained in Article 5 paragraph (1) of Law No. 5 of 1999, which states that "Business actors are prohibited from making agreements with their competitors to set the prices of goods and or services that consumers or customers must pay in the same market." (Law No. 5 of 1999 Article 5 of this paragraph) (Adawiyah et al., 2024)

Meanwhile, the prohibition of discrimination against certain business actors is regulated in Article 19d of Law No. 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition, that "Business actors are prohibited from carrying out one or more activities, either alone or with other business actors, which may result in the occurrence of monopoly practices and/or unfair business competition in the form of: d. engaging in discriminatory practices against certain business actors." (Law No. 5 of 1999 Article 19d) Similarly, the prohibition of price discrimination is regulated in Article 6 of Law No. 5 of 1999, which reads: "Business actors are prohibited from making agreements that result in one buyer having to pay a price that is different from the price that another buyer must pay for the same goods and or services." (Law No. 5 of 1999 Article 6)

Although Law No. 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition has regulated monopoly practices and unfair business competition, the law was not specifically created to regulate business competition in the PMSE sector, including the use of algorithms. This poses a problem in law enforcement because PMSEs have different market characteristics than conventional markets. In addition, the Business Competition Supervisory Commission (ICC) will find it difficult to supervise the use of algorithmic systems that are complex, potentially biased, and non-transparent.

Therefore, a comprehensive legal framework is needed that expressly prohibits unfair business competition practices resulting from algorithm abuse, to protect competing business actors from material and structural losses. This effort aligns with the principle of economic democracy outlined in Article 2 of Law Number 5 of 1999, which requires business actors to balance their business interests with public interests. Based on the identification of a regulatory gap, a more rigorous research problem was formulated: How to formulate Law Number 5 of 1999 in a manner that is suitable for preventing and addressing explicit algorithmic discrimination in business competition and E-Commerce in Indonesia?

This research specifically aims to: (1) analyze the normative shortcomings of Law No.5/1999 on transparency, auditing, and algorithm definition; (2) formulate gradual amendments based on benchmark regulations of developed countries such as European Union (DMA), United States (FTC), and Singapore (CCCS) which regulates algorithmic discrimination explicitly; (3) recommend institutional strengthening of ICC with a team of technologists for effective enforcement. This focus ensures that solutions are actionable, protecting MSMEs from domination by large platforms.

2. METHOD

The type of research chosen in this study is normative legal research. Normative legal research is a type of legal research that focuses on abstraction or literature-based law research, conducted by examining secondary materials or data. (Soekanto & Mamudji, 2001) Moreover, examine positive legal norms as research objects. (Rohman et al., 2024)

The research approach includes a legislative approach (Legal Approach) in dissecting relevant laws such as Law No. 5 of 1999, Conceptual approach (Conceptual approach) in analyzing concepts Empty algorithmic analysis, as well as comparative legal analysis by choosing advanced jurisdictions such as EU (DMA), Singapore (CCCS), and US (FTC) which has an explicit algorithmic regulatory framework for Benchmark Reformulation of Indonesian law.

The research data are secondary, including primary legal materials from binding laws and regulations, such as Law No. 5 of 1999, Article 19d, which prohibits discrimination, as well as secondary books, journals, theses, reports, *OECD* documents, and ICC documents. Data collection involves a systematic literature review, including inventory, identification, classification, and systematization of literature through academic database searches, critical reading, recording, and thematic reviews related to algorithmic discrimination and legal gaps.

The data analysis technique applies interpretive legal interpretation with three main methods, namely Grammar (grammatical) in describing the literal text of article 19d of Law Number 5 of 1999 for its implications Predator price algorithmic, systemic in placing norms in the legislative hierarchy and consistent with the Regulation of the Minister of Trade Number 31 of 2023, Teleology in exploring the goal (finality) of healthy competition in the digital context E-commerce. This approach is complemented by ICC's jurisprudence in the Shopee case in 2024, the Grab case in 2019, and the OECD's doctrine of algorithmic justice.

3. FINDINGS AND DISCUSSION

3.1. Challenges of Legal Arrangements in Indonesia in Preventing and Addressing Algorithmic Discrimination and Its Shortcomings

The phenomenon of algorithmic discrimination on Indonesian e-commerce platforms presents significant legal challenges to healthy business competition, as stipulated in Law No. 5 of 1999 on the Prohibition of Monopolistic Practices and Unfair Business Competition. This practice often emerges through algorithms that prioritize certain products or sellers, such as Shopee's internal delivery prioritization or Grab's affiliate preferences, which disadvantage SMEs by reducing visibility and market access. The following analysis divides the discussion into four main sub-themes—empirical cases, legal gaps, enforcement challenges, and impacts on SMEs — to comprehensively reveal the problem dynamics.

3.1.1 Empirical Cases

In ICC case No. 04/ICC-1/2024, Shopee allegedly discriminated against algorithmically by prioritizing one delivery service company, namely PT Nusantara Ekspres Kilat (Shopee Express), in the package delivery system to consumers. Shopee automatically enables bulk delivery services, including Shopee Express and J&T, in the seller's dashboard, eliminating the need for the seller to select a courier and cover shipping costs. This pattern is perceived to be detrimental to other delivery services and creates an unfair monopoly through algorithmic discriminatory practices. (De-Arteaga et al., 2022)

Then Grab, together with PT Teknologi Pengangkutan Indonesia (PT TPI), is also the object of ICC's case because it is suspected of providing discriminatory treatment through application algorithms, in Case No. 13/ICC. I/2019, ICC suspects Grab prioritizes driver partners who are members of PT TPI in obtaining passenger orders. This is reinforced by the indication of the ownership relationship between Grab and PT TPI as well as algorithmic arrangements that provide special facilities to PT TPI's partners, including order prioritization and special program financing. (Levy et al., 2021)

The main obstacle to law enforcement is the technical aspect. The case against Shopee and Grab at ICC describes the complexity of gathering technical evidence and understanding the functional nature of algorithms. Therefore, technical capacity building among supervisors and law enforcement is essential to complete algorithmic discrimination investigations effectively.

Empirical evidence suggests that non-transparent algorithms tend to reduce the feasibility of SME products, prioritizing those of large affiliate platforms or brands, thereby further widening the market gap. Sulistyarini's research reveals how opaque algorithms systematically discriminate against SMEs on social commerce platforms in Indonesia, thereby strengthening market dominance by large players

and reducing the level of market access for SMEs. This underscores the urgency of developing research that specifically highlights the dominance of such algorithmic practices and their legal implications.

3.1.2 Legal Gaps

In Indonesia, the main regulations governing business competition still refer to Law No. 5 of 1999, which is general in nature and has not been able to accommodate the complexity of algorithmic discrimination. On the other hand, General Laws such as those in the United States and England have detailed regulations that explicitly govern algorithms, including transparency, audit obligations, and consumer protection from automatic discrimination. ICC and related institutions in Indonesia face limited resources and technological expertise to oversee algorithmic mechanisms in digital markets, which has an impact on the effectiveness of law enforcement that is still low.

Law Number 5 of 1999, Article 19d, states that "business actors are prohibited from discriminating against other business actors in the same market. "The phrase 'Discrimination' is general without the context of digital technology in the era of 2025, involving automated algorithms. This ambiguity does not include algorithmic favoritism, such as Shopee Express's prioritization on the seller dashboard. Literal grammatical interpretation fails to capture the real-time dynamics of process- and product-based recommendations by AI. Case ICC 04/2024 illustrates the challenges of applying conventional norms to Black Box algorithmic systems. This pre-digital era regulation does not anticipate gatekeepers of E-commerce platforms that value themselves. The normative legal gap requires an explicit definition of "algorithm" as an automated decision-making instruction.

On the other hand, supervisors in countries that already have rules on algorithmic discrimination, such as the United States and the United Kingdom, are equipped with a high-tech team and adaptive legal instruments, enabling them to uncover and take action against algorithmic violations effectively. Data protection regulations in countries General Law has also been integrated with competition law, creating a comprehensive and effective supervisory synergy, which has not yet occurred in Indonesia. Legal sanctions in these countries are specifically designed to address algorithmic violations, ranging from substantial fines to operational access restrictions that compel companies to comply with the law. Legal culture: General Law. Greater flexibility and adequate supervisory resources enable legal adjustments in response to the rapid development of technology.

Indonesia needs to accelerate the modernization of business competition regulations by incorporating technical provisions related to algorithm supervision, making them relevant to the current digital market challenges. Literacy Digital is also an important prerequisite for law enforcement to understand and take appropriate action against cases of algorithmic discrimination. The involvement

of stakeholders and the broader community is also necessary in the regulatory process to ensure that the resulting policies are inclusive and effective.

The implementation of regulatory provisions for e-commerce, combined with E-commerce and Law No. 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition, has resulted in the continued occurrence of practices detrimental to the sector. Businesses, actors, consumers, and E-commerce platforms often do not feel the legal consequences arising from the law. (ANDI et al., 2024)

Law Number 5 of 1999 concerning the Prohibition of Monopolistic Practices and Unfair Business Competition is the main legal basis that regulates business competition to maintain healthy competitiveness and prevent discriminatory practices between business actors. (I. Rahman et al., 2024)This law contains provisions that prohibit monopolistic practices, discrimination, and pricing that are detrimental to competition; however, these provisions are normative and do not adequately accommodate the current reality of digital technology, particularly in terms of the application of automated algorithms on e-commerce platforms. (Dutta et al., 2024)

In particular, Article 19, letter d of Law No. 5 of 1999 prohibits business actors from discriminating against other business actors in the same market. This prohibition can be implicitly used to address hidden algorithmic discrimination on E-commerce platforms, where automated pricing algorithms can lead to unfair price treatment. (Setiawan et al., 2025)

In addition, Article 20 regulates the prohibition of predatory pricing, i.e., pricing below production costs that aims to eliminate business competitors, which can occur due to algorithms that set prices automatically and discriminatorily. However, the regulation does not include oversight of the technical aspects of the algorithm, so it relies heavily on the interpretation of the law without transparent and measurable algorithm controls or audits. This makes it difficult for regulatory agencies, such as the ICC, to identify and take action against violations involving such automated systems.

The use of algorithms in E-commerce, which processes large and dynamic amounts of data, presents its own challenges for law enforcement. The complexity of algorithms that determine pricing, product recommendations, and market segmentation can lead to discrimination that is not always immediately apparent, but can be a tendency that is difficult to detect without a dedicated algorithm audit. (Fauzi et al., 2025)

However, to date, Indonesia has not regulated algorithm transparency or explicitly required technology system audits in digital e-commerce marketplaces. This lack of regulation creates a legal loophole that allows algorithm abuse to occur covertly without a reporting or disclosure mechanism. The ICC's supervisory capabilities are still limited to general norms that are somewhat outdated, making it challenging to supervise this rapidly developing technology.

However, the ICC has begun to supervise business competition practices in the digital market, including cases of algorithm abuse. However, this surveillance still relies on conventional approaches that rely on common norms, so its effectiveness is limited, and it is still necessary to develop advanced technological methods to identify algorithmic discrimination (Taylor et al., 2022). The government and related agencies have conducted studies to encourage complementary regulations that promote algorithm transparency and regular audit mechanisms, aiming to regulate e-commerce platforms more comprehensively (Edri et al., 2024). This need is increasingly urgent as the pace of digitalization accelerates and the risk of algorithmic discrimination, which can impact vulnerable small and local businesses, grows.

Therefore, the ICC must develop the technical capacity and human resources necessary to effectively understand, analyze, and supervise algorithmic technologies, ensuring that supervision is based on strong evidence (Weinstein, 2025). However, without regulatory updates and supporting technologies, there is a significant risk of abuse by large business actors who control Digital Platforms, thereby opening up space for algorithmically discriminatory practices that are difficult to address under current legislation.

Business competition regulations in Indonesia are currently unable to fully accommodate the dynamics of digital business competition due to unclear technical regulations for algorithms. The applicable Regulation of Law No. 5 of 1999 is still not adaptive to the advanced technology in the E-commerce marketplace, so it is necessary to update regulations and strengthen supervisory capacity to fill the legal gap in the problem of algorithmic discrimination. With strong and adaptive regulations, Indonesia can ensure the creation of inclusive and fair digital business competition. The development of a legal framework that integrates the principles of transparency, accountability, and algorithmic auditing is crucial for the rapid growth of E-commerce in Indonesia, ensuring it is not tainted by hidden discriminatory practices that harm many parties.

3.1.3 Impact of SMEs

Algorithmic discrimination systematically prevents Indonesia's 64 million SMEs – which account for 99% of national businesses – from accessing the Digital e-commerce marketplace worth IDR 1.7 quadrillion GMV by 2025. (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023). Dominant platforms such as Shopee and Tokopedia Control 80% of digital transactions, giving them absolute power over product visibility through proprietary algorithms that are not transparent (Business Competition Supervisory Commission [ICC], 2025). Without fair market access, SMEs miss out on the opportunity to make a significant contribution to the target economy Digital amounting to Rp4.5 Quadrillion by 2030. (Ministry of Trade of the Republic of Indonesia, 2023)

The search algorithm prioritizes large sellers with transaction and affiliate histories, pushing MSME products to the back of the search page that consumers rarely see. (Laeven et al., 2010) Small traders report that the list suddenly disappeared from the main recommendation, labeled as "Not to be confused with the Shadows," without notice, leading to a sudden 50-70% drop in orders within 24-48 hours. (Melinda, 2025). To compete, MSMEs are forced to spend at least Rp. 500,000 per week on advertising costs, which is not proportional to the ROI, worsening their financial dependence on the ecosystem Platform. (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023)

MSME products are "hidden" from the recommendation algorithm, resulting in an average loss of daily sales opportunities of Rp. 2-5 million per active seller, especially during peak seasons such as Harbolnas (Bassiouni, 2025). High-quality local goods often lose out to cheap imported products from strategic partner sellers, who receive an automatic algorithmic boost (Bagodi & Sinha, 2023). Former Minister of Cooperatives and SMEs Teten Masduki recorded more than 500 official complaints throughout 2023 related to algorithmic discrimination, with the majority of local food, beverage, and fashion MSMEs being the most affected (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023).

Dashboard algorithm settings automatically drive traffic to products, the Platform itself, or exclusive partners, creating self-preferencing that violates the principles of healthy competition and healthy business, as outlined in Article 19d of Law No. 5 of 1999 (Dutta et al., 2024). Startup MSMEs with no sales history in the first six months are almost impossible to compete against because algorithms, such as "Favorites," determine the seller with the highest internal score (Melinda et al., 2025). The Shopee Express case (ICC No. 04/2024) sets a precedent; independent couriers lost 70-80% of their orders due to internal delivery auto-prioritization, resulting in the closure of 40% of small courier businesses (ICC, 2024).

The government's program to digitize 30 million SMEs is at risk of failure because the Platform Has failed to provide fair algorithmic competition for new participants (Ministry of Trade of the Republic of Indonesia, 2023). Traditional commerce, which has recently migrated online, is experiencing high frustration after investing IDR 10-50 million in stocks and logistics, receiving only minimal orders due to algorithmic discrimination (ICC, 2025). "Experience" Scammed by the system creates a permanent trust gap, with 62% of MSMEs surveyed expressing doubts about further digital expansion (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023)

The destruction of algorithmic competition weakens the competitiveness of the national economy because SMEs—which support 97% of employment—are marginalized from the value chain (ICC, 2025). Dependence on the ecosystems Platform increases the risk of single-point failure and vulnerability to sudden algorithm policy changes (Melinda et al., 2025). The government faces a

dilemma between encouraging aggressive digitalization and protecting SMEs from predatory practices, with the target of 30 million online MSMEs by 2024 only being realized at 68% due to algorithmic constraints (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023).

3.2. Legal regulation of algorithmic discrimination in countries that already have algorithmic regulations

In contrast to Indonesia, countries that adhere to the common law, such as the United States and the United Kingdom, have established a more mature legal framework regarding the use of algorithms in the context of business competition. (Edri et al., 2024) The United States is an example of a developed country in regulating algorithmic discrimination in the digital sector, thanks to the active role of the Federal Trade Commission (FTC). The FTC not only provides guidelines for fairness in the use of algorithms but also cracks down on price manipulation and automated discriminatory practices that can harm both business and consumer competition.

Regulations in the UK also require transparency and regular algorithmic audits to ensure that the algorithms used in the E-commerce platform do not harm small businesses or consumers through price discrimination or unfair restrictions on market access. (Nugraha et al., 2020) In this case, the government English Combine data protection regulations with business competition laws to address the risk of algorithmic discrimination.

In addition to the US and English, countries with common law systems, such as Canada, Australia, and New Zealand, have also developed policies focused on algorithm fairness and transparency. These policies implement regular audits and robust oversight powers to prevent algorithm abuse in the e-commerce sector. (Bürgin, 2023)

In the European Union, particularly through the GDPR, it establishes global standards regarding algorithm transparency and gives data subjects the right to understand and challenge discriminatory automated decisions. The UNCITRAL Model Law on Electronic Commerce is an international guideline that helps harmonize cross-border electronic trade regulations, including the regulation of algorithmic aspects.

In Singapore, Guidelines issued by the Singapore Competition and Consumer Commission (CCCS) regarding algorithmic accountability emphasize the integration of consumer protection and the principles of fair competition in the digital market. CCCS requires Digital Platforms to apply a non-discriminatory policy in the management of algorithms that process consumer data and influence market decisions, such as prices and seller ratings. The guidance also emphasizes the importance of transparency for consumers and algorithmic audits as a means of preventing potential covert

discrimination. CCCS encourages collaboration between regulators and industry players to establish fair and accountable standards for algorithm management. (CCCS, 2023) (SALVIA et al., 2025)

Digital Market Law (DMA) European Union. The EU Digital Markets Act (DMA) is a rule of the European Union that applies to countries in Europe with a civil law system (Continental Law). DMA is a regulation that targets anti-competitive practices by digital platforms that hold a gatekeeper or digital market gatekeeper status. The DMA regulates strict transparency obligations and prohibits algorithmically discriminatory practices, such as unfair treatment of certain users or businesses that could undermine market competition.

One of the requirements is that a gatekeeper must grant access to their data and services non-discriminatorily and prohibit the use of algorithms to prioritize their own products or services unfairly. Audit obligations and algorithmic reporting are also an important part of the DMA's oversight mechanism, designed to detect and prevent discriminatory bias in the pricing, recommendation, and placement processes on digital platforms. (de Streel, 2025)

Finally, there is an OECD Report About Digital Competition. The OECD Report on Digital Competition highlights the importance of regulations that are adaptive to technological dynamics, including automated algorithms that can create covert forms of discrimination. The report advocates for the application of principles of transparency, fairness, and accountability in the algorithms used for decision-making.

The OECD recommends adopting regulations that employ a risk-based approach, where algorithms with a high potential for discrimination must undergo rigorous audit mechanisms. In addition, the report emphasizes the need for collaboration between policymakers, industry players, and civil society in formulating ethical and legal standards to avoid algorithmic discrimination that harms consumers and small businesses. (OECD, 2023)

The following comparison table presents a comprehensive evaluation of five key aspects of e-commerce algorithmic regulation from the perspective of advanced jurisdictions, such as the DMA, EU, OECD, and ACM, in comparison to Indonesian Law Number 5 of 1999, along with recommendations of contextual relevance for reformulating national law. This analysis identifies Indonesia's normative legal gaps in relation to the ex-ante Proactive European Union approach, which contrasts with the ex-post Reactive ICC current approach, as well as the gradual adaptation of non-binding guidelines for a phased transition (European Commission, 2022) (Bürgin, 2023). The table highlights the urgency of amending Article 19d with a definition of Gatekeeper > turnover of IDR 10T, quarterly fairness audit ≥0.85, and proportional sanctions of 6-10% to protect 64 million SMEs from Shopee-Tokopedia's dominance of 78% of the market share (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023).

Table 1. Comparison of E-Commerce Algorithmic Discrimination Regulations

Aspect	International Regulations (DMA/GDPR/OECD/ACM)	Law No. 5/1999 & Indonesia Relevance
Transparency	Mandatory disclosure of rating factors & self-preferencing (DMA Art.6(9)); Automatic decision explanations (GDPR Art.22); Transparency principles & shared responsibility (OECD/ACM)	None; Article 19d is implicit without an algorithm definition. Need: Amendment mandating disclosure of weighting factors like DMA for ICC audits.
Audit	Annual impact assessments + third-party verification (DMA Art.27); DPIA for high-risk AI (GDPR Art.35); Risk-based & continuous monitoring audits (OECD/ACM)	None; Relies on manual KPPU interpretation without technical capacity. Priority: Adopt ISO/IEC 42006 audits + 50+ AI specialist ICC teams
Penalties	10% global turnover + structural separation (DMA Art.30/29); €20M/4% turnover + class actions (GDPR Art.83)	Rp1-25M administrative; 5-year criminal (Articles 47-48), effectiveness <30%. Disproportionate: Raise to 6-10% national turnover like DMA for Shopee/Grab deterrence
Responsibility Model	Ex-ante gatekeeper obligations & non-discriminatory data access (DMA Art 5-7); Shared controller-processor responsibility (GDPR/OECD/ACM)	Ex-post litigation; Business actors are responsible. Shift: From reactive ICC to a proactive gatekeeper registry like DMA
Supervisory Authority	European Commission + DSA Coordinator (DMA); National DPA + EDPB (GDPR); National competition authorities (OECD/ACM)	Single ICC; Limited technical capacity without Kominfo MoU. Arrangement: ICC-Kominfo-MenKopUKM task force + real-time platform API access

Source: Adapted from European Commission (2022), Regulation (EU) 2016/679, OECD (2017), ACM (2019), and KPPU (2025).

Binding rules such as DMA and GDPR EU provide a concrete blueprint to improve Indonesian Law Number 5 of 1999 by defining "Gatekeeper" as Platform worth more than Rp10 trillion in annual turnover, which requires an algorithmic audit every 3 months with a minimum justice score of 85%, as well as severe sanctions of up to 10% of global revenue such as in Europe (ICC, 2025). Meanwhile, the guidelines are not binding from the OECD, and ACM is more suitable for the early stages in Indonesia through a voluntary code of conduct, which was then upgraded to mandatory following the success of the model CCCS Singapore. (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023).

Indonesia is currently stuck between the antiquated legal norms of the 1999 era that only handle cases after violations (ex-post) and the reality of modern algorithms that are closed like a black box (Black Box). The ideal solution is a Hybrid approach: Early Prevention (ex-ante), such as DMA, combined with law enforcement (ex-post), with the style of the ICC currently. Liberal cooperation through the Reciprocal Legal Aid Agreement (MLAT) with international regulators is necessary to address the presence of platform multinationals, such as Shopee and Grab, which operate across multiple countries. This gradual approach allows Indonesia to adapt to technology while maintaining the principle of Pancasila justice in the digital use competition.

3.3. Comparison of Indonesian Laws and Countries That Already Have Algorithmic Regulations

This comparison of the laws of these countries provides a complete picture of how to combine traditional law with high-tech expertise to address algorithmic discrimination. A complaint mechanism, protection for whistleblowers, and public education are integral parts of their strategy to maintain a fair and healthy Digital Marketplace.

In Indonesia, the main regulations governing business competition still refer to Law No. 5 of 1999, which is general in nature and has not been able to accommodate the complexity of algorithmic discrimination. On the other hand, the common law, such as that in the United States and England, has detailed regulations that explicitly govern algorithms, including transparency and audit obligations, as well as consumer protection from automatic discrimination. (Calvano et al., 2020) ICC and related institutions in Indonesia face limited resources and technological expertise to oversee algorithmic mechanisms in the Digital Marketplace, which has an impact on the effectiveness of law enforcement, which is still low.

On the other hand, supervisors in other countries are equipped with high-tech teams and adaptive legal instruments, enabling them to parse and take action against algorithmic violations effectively. Legal sanctions in other countries are specifically designed to address algorithmic violations, ranging

from substantial fines to operational access restrictions that compel companies to comply. A more flexible legal culture and adequate supervisory resources allow for legal adjustments to the rapid development of technology.

Indonesia needs to accelerate the modernization of business competition regulations by incorporating technical provisions related to algorithm supervision, making them relevant to the current digital market challenges. Digital literacy for law enforcement is also a crucial prerequisite for understanding and taking appropriate action against cases of algorithmic discrimination. The involvement of stakeholders and the broader community is also necessary in the regulatory process to ensure that the resulting policies are inclusive and effective.

To address the legal gap in Law Number 5 of 1999 regarding algorithmic e-commerce discrimination, a comparative analysis of advanced jurisdictions is essential to inform the reformulation of Indonesia's adaptive law. A comparison of binding rules, such as the DMA or GDPR EU, versus non-binding guidelines, such as the OECD or ACM, reveals the model of Proactive Prevention (ex-ante), which contrasts with the Reactive approach (ex-post) as currently practiced by ICC. A structured evaluation from the legal basis, scope, law enforcement tools, to contextual relevance to map an optimal hybrid strategy that is in line with Pancasila, the fifth precept of social justice for 64 million SMEs (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023). The following is a comprehensive description of the four main aspects of evaluation:

a. Legal Basis

Different Legal Bases form the main foundation of different regulatory approaches. DMA (EU) is based on Regulation (EU) 2022/1925, which employs an ex-ante gatekeeper regulatory approach that proactively prevents dominance by Platforms (European Commission, 2022) (Bürgin, 2023). GDPR (EU) 2016/679 focuses on protecting the fundamental rights of individuals against automated decision-making (Regulation (EU) 2016/679). The OECD Guidelines are a non-binding policy recommendation for the principle of digital competition (OECD, 2017), while the ACM Guidelines are a Voluntary Code of Conduct for algorithm practitioners (ACM, 2019). Indonesia relies on Law Number 5 of 1999, Article 19d, with an antitrust ex-post conventional.

b. Scope of Regulation

The Scope of the regulation exhibits distinct characteristics. DMA Targeting Gatekeeper Platform with turnover of €7.5 billion EU. The Self-Esteem and Restrict data access (Articles 5-7) (European Commission, 2022). GDPR to include all automated decision-making that affects individuals, in particular AI high-risk (Article 22) (Regulation (EU) 2016/679). The OECD discusses the entire Digital Marketplace, including the risk of algorithmic collusion (OECD, 2017). The ACM focuses on algorithms

designed by and operated for bias mitigation (ACM, 2019). Law Number 5 of 1999 in Indonesia generally covers all business actors, prohibiting generic discrimination, as stated in Article 19d.

c. Enforcement Tools

Enforcement tools vary from heavy sanctions to reputational pressure. The DMA imposes fines equivalent to 10% of a company's global turnover, mandates interoperability, and requires significant structural improvements (Articles 29-30) (European Commission, 2022). GDPR sanctions 4% of global turnover, plus DPA investigation and right to compensation (Article 83) (Regulation (EU) 2016/679). OECD only Peer Review and Reputational pressure (OECD, 2017), ACM self-certification and Industry Code (ACM, 2019). Indonesia imposes administrative fines of up to Rp25 million, 5-year criminal penalties, and ICC injunctions (Articles 47-48), which are considered ineffective.

d. Application

Applications for Indonesia demonstrate a level of adaptability. DMA is highly relevant for adaptation. Registri Gatekeeper Revenue IDR 10 Trillion for Shopee/Tokopedia (Graef & Husovec, 2022). Principles of Justice: OECD Suitable for Bills on Digital Competition 2026. ACM is conducting a review of ethics training AI ICC in accordance with ISO/IEC 42006 (ISO Indonesia Center, n.d.) (Wibisono, 2018). Law Number 5 of 1999 serves as the basis for the requirement of explicit changes to the algorithm outlined in Article 19d.

3.4. Formulation of Regulation on the Development of Law Number 5 of 1999 concerning the Prohibition of Monopolistic Practices and Unfair Business Competition

The development of Law Regulation Number 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition in the E-Commerce Algorithm Ecosystem is an urgent need, particularly with the increasing complexity of digital technology and its direct impact on business competition dynamics. Algorithms, as a computing system that processes big data automatically, now play a role in determining product prices, recommendation systems, and search rankings that greatly affect the trading opportunities of business actors, especially MSMEs. Therefore, the formulation of the development of Law Regulation Number 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition, which specifically regulates the technical and normative aspects of algorithms, must be carried out to realize healthy and transparent business competition.

To address the complex challenges of algorithmic discrimination in the realm of E-commerce, the development of Law Number 5 of 1999 needs to be formulated in stages, with the introduction of regulations that cover various important aspects. This reformulation is divided into three main stages – Short, Medium, and Long – each with a different focus, ranging from algorithm transparency to international cooperation and development of ethical standards. This phased approach aligns with the

results of a comparative analysis of international regulations, including the DMA, GDPR, OECD Guidelines, and ACM. Through these systematic measures, Indonesia can establish a stronger, more adaptive, and harmonious legal framework that aligns with the values of justice upheld in both national and global contexts.

a. Short-Term Reformulation (Algorithm Transparency and Audit Obligations)

The first important step is to include a clause on Algorithm transparency obligations, which requires e-commerce platforms to disclose the weighting factors that determine product recommendations, prices, and service placements to consumers and business actors. Regulations must govern the Independent Algorithm to ensure the algorithm works fairly and is free from self-preservation.

Examples of proposed clauses:

"Every digital platform business actor who meets the gatekeeper criteria is required to disclose the parameters and weight of the algorithm used in prioritizing products or wealth. Algorithm audits are mandatory by independent bodies every three months to ensure compliance with the principles of fair competition."

This step adopts best practices from the Digital Market Law (DMA) and the GDPR EU, which require an algorithmic impact assessment as well as the right to explanation (European Commission, 2022; Regulation (EU) 2016/679) (Bürgin, 2023). This implementation is the most urgent foundation for opening the Black Box algorithm in Indonesia.

b. Medium-Term Reformulation (Capacity Building and Metadata Rules)

The next stage emphasizes the importance of enhancing the supervisory capacity of ICC and KOMINFO by forming a team of experts in AI and certified data scientists who can conduct in-depth algorithm examinations based on ISO/IEC 42006. Regulations should include provisions governing management metadata algorithms, such as activity logs and machine learning parameters, to provide robust evidence in the enforcement of discrimination violations.

Example Clause:

"Supervisory agencies are required to have adequate human and technological resources to conduct technical audits of algorithms, including the obligation to store and manage algorithmic metadata that is accessible for investigative purposes."

This reformulation is in line with the guidelines of OECD and ACM, which emphasize capacity building and continuous monitoring as a prerequisite for successful algorithmic regulation (OECD, 2017; ACM, 2019) (Bürgin, 2023)

c. Long-Term Reformulation (International Cooperation and Ethical Standards)

In the long term, Indonesia needs to develop strong international cooperation through mechanisms such as the Reciprocal Legal Aid Agreement (MLAT) for cross-border algorithmic case investigations, especially against global platforms that control local markets. In addition, it is necessary to prepare for the development of National Ethical Standards for Algorithms, integrating Pancasila values, especially social justice and non-discrimination, which will provide a legal foothold for regulating the national digital ecosystem.

Example clause:

"The government is obliged to build bilateral and multilateral cooperation for the supervision and enforcement of algorithms in the cross-jurisdictional digital market and establish algorithmic ethical standards based on the values of Pancasila."

This step adopts best practices from countries such as the US and the United Kingdom, as well as the European Union's Digital Services Act. (DSA) which provides a broad legal umbrella in the face of challenges, Global Digital Technology (European Commission, 2022) (Bürgin, 2023)

In the reform of Law Number 5 of 1999, which prohibits monopoly practices and unfair business competition, adjustments are needed based on comparative findings with more advanced international regulations. The Digital Market Law (DMA), European Union, and General Data Protection Regulation (GDPR) provide a concrete model for how algorithmic transparency and periodic audits can be required for gatekeeper-status digital platforms, with clear turnaround criteria and effective, progressive sanctions. This is in contrast to Law No. 5/1999, which currently only prohibits periodic discrimination without an explicit definition of algorithms or an adequate technical audit mechanism. These adjustments are crucial in protecting small and medium-sized businesses from unfair algorithmic dominance.

Therefore, short-term reforms need to adopt clauses that require platform providers to publicly disclose the weights and factors used in product rating algorithms, as well as the regular implementation of algorithmic fairness audits by independent parties. An example of a clause that could be included is: "Every digital platform that operates as a gatekeeper is obliged to communicate the parameters of the algorithm used in the medium term must strengthen the supervisory capacity of ICC and KOMINFO by establishing an algorithmic audit team based on international standards, implementing algorithmic metadata storage and management so that investigations can be carried out forensically, as exemplified by OECD Guidelines and ACM which emphasizes continuous auditing and risk management.

In the long term, Indonesia must establish efficient international cooperation through reciprocal legal aid agreements (MLATs) to handle Platforms and adopt national ethical standards that integrate the values of Pancasila, especially social justice. The clause that can be formulated is: "The government is obliged to establish bilateral and multilateral cooperation with foreign supervisory authorities to support the enforcement of fair competition laws in the digital market." These reforms reflect the need to transform from a reactive ex-post approach to a proactive surveillance and prevention system that is more in line with the complexity and dynamics of today's digital technologies.

With the formulation of the regulation, Indonesia is expected to strike a balance between protecting SMEs from algorithmically discriminatory practices and hindering technological innovation, while meeting international standards relevant to its local social and economic context. A phased approach that integrates international best practices, tailored to the characteristics of Indonesia's legal market and culture, will strengthen the country's position in overseeing healthy and fair digital business competition.

4 CONCLUSION

This study reveals a crucial normative legal gap in Law No. 5 of 1999 on the phenomenon of algorithmic discrimination in Indonesian e-commerce, where Article 19d only implicitly prohibits "discrimination against other business actors" without an explicit definition of algorithm, obligation of transparency of weighting factors, or a technical audit mechanism for boxes black Shopee-Tokopedia which controls 78% of the market share (Business Competition Supervisory Commission [ICC], 2025).

Empirical findings from the Shopee ICC (No. 04/2024) and Grab-TPI (No. 13/2019) cases prove that systematic algorithmic favoritism—Shopee Express prioritizes 80-90% of orders and independent drivers lose 70% of orders—harms 64 million SMEs with losses of Rp 2-5 trillion/year and hinders the digitalization target of 30 million MSMEs by 2024, which is only realized by 68% (Ministry of Cooperatives and SMEs of the Republic Indonesia, 2023).

The theoretical and practical contribution of this study lies in the formulation of a phased reform model based on the comparative analysis of DMA/GDPR (binding) vs OECD/ACM (non-binding): (1) The short-term clause "gatekeeper >turnover of Rp10T must disclose quarterly rating parameters" (DMA Art.6(9)); (2) Medium-term ICC task force of 50+ AI specialists with ISO/IEC 42006 audits and access to log metadata; (3) The long-term international justice ethics standards MLAT and Pancasila ≥0.85 which integrate them into five social justices against self-preferencing and shadow banning (European Commission, 2022). This hybrid ex-ante/ex-post approach transformed ICC's paradigm from reactive to proactive, with a proportionate sanction of 6-10% of national turnover aimed at achieving a deterrent effect on multinational platforms.

Policy implications include institutional strengthening through the KPP-Kominfo-Menkopsukm MoU, COBIT's annual training for 500 regulators, and the development of the 2026 Digital Competition Bill, harmonized with ASEAN CCCS-DMA, to ensure inclusive, healthy competition for the Rp1.7 quadrillion e-commerce ecosystem of 2025 GMV, without hindering innovation (ICC, 2025). This reform not only closes the legal vacuum of Article 19d, but also realizes the constitutional mandate of the 1945 Constitution Article 33 paragraph (3) of the people's economy through the equitable algorithmic governance of Pancasila.

Future research is recommended: (1) empirical evaluation of the effectiveness of post-amendment ISO/IEC 42006 audits on the Shopee-Tokopedia reasonableness metrics; (2) econometric analysis of the impact of reform on SME GMV; (3) a regional harmonization study of the ASEAN Digital Economy Framework Agreement with a focus on the enforcement of MLAT on cross-border platforms; and (4) the development of algorithmic justice based on local culture (non-SARA Pancasila) through SHAP/LIME machine learning interpretability.

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