

Algorithmic Discrimination and Market Competition: Exploring the Ethical and Legal Issues of Algorithm Management by Internet Companies

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Abstract: The ongoing evolution of the Internet economy has led to the emergence of algorithmic management as a key strategy for enhancing business efficiency among Internet companies. However, this approach has also given rise to concerns about potential algorithmic discrimination. In practice, the opacity of algorithms, the absence of legislative and administrative oversight, the internal management of enterprises, and other factors contribute to the emergence of algorithmic discrimination. At present, research on this ethical and legal issue is largely confined to the regulation of macroeconomic and market levels, as well as the general protection of users from the perspective of consumer rights and interests. There are few direct specifications for the problem of algorithmic discrimination. Following a comprehensive examination of the relevant research methods, including normative analysis, case analysis, comparative analysis, and others, this study investigates the existence of algorithmic discrimination and unfair competitive practices employed by Internet companies from the perspectives of both consumers and Internet companies. The aim is to provide insights that can inform the advancement of algorithmic management practices in a manner that is beneficial to all stakeholders.

Keywords: Algorithmic Discrimination; Unfair Competition; Internet Companies; Legal Regulation

1. Introduction

With the continuous development of the Internet economy, the size of China's Internet users has exceeded 1.079 billion people in 2023, and China has jumped into a veritable

Internet power. Artificial intelligence and big data are representative technologies in the fourth technological revolution, in which the arrival of the era of artificial intelligence makes the application of algorithmic technology more diversified and extensive. Algorithms, a series of problem-solving steps and instructions within the context of computer science, are computational programs derived through programming. However, as a neutral technical means, algorithmic technology has, under the manipulation of certain individuals and groups, gradually become a crucial weapon for e-commerce platforms and enterprises to participate in market competition, bringing the issue of algorithmic discrimination to the forefront and severely infringing on consumer rights.

One of the most prevalent forms of algorithmic discrimination is "big data price discrimination". According to a survey report released by the Beijing Consumers Association on this issue, among the 4163 valid questionnaires collected, approximately 76.77% of respondents believed that big data price discrimination still exists, and around 64.33% of respondents indicated that they had experienced it themselves. In judicial practice, due to the immediacy, concealment, and ambiguity of big data price discrimination, consumers' rights are often compromised, yet they are unable to properly safeguard their legitimate rights due to the inability to provide evidence. Arbitrary, inconsistent, or erroneous algorithmic decision-making therefore raises serious concerns as it could limit our ability to achieve the goals, we set for ourselves and access the opportunities for which we qualify [1].

In response to the practical need to address such issues and to protect the legitimate rights of all parties involved, relevant laws and

regulations, including the "E-commerce Law of the People's Republic of China," the "Personal Information Protection Law of the People's Republic of China," and the "Regulations on the Management of Algorithm Recommendation in Internet Information Services," have established certain norms regarding the reading and use of user information by commercial entities and the application of big data technology algorithms. Our concern about artificial intelligence and algorithmic issues today has a long history: looking back twenty, forty, or even a hundred years, people have had similar hopes and concerns about artificial intelligence algorithmic systems [2]. Therefore, exploring issues related to algorithmic discrimination and market competition holds profound practical significance.

2. Literature Review

2.1 Algorithms

Algorithm is a set of instructions for how a computer should accomplish a particular task [3]. These processes are based on certain algorithmic logic, taking in specific types of data as input, and automatically generating and outputting decisions or results with particular orientations.

2.2 Algorithmic Discrimination

Algorithmic discrimination refers to the application of algorithmic technology that yields different outcomes for specific groups or individuals. Common forms include price discrimination, employment discrimination, and credit discrimination. As a product of human society, algorithms can be divided into subjective and objective algorithmic discrimination based on their mechanisms:

Subjective Algorithmic Discrimination: This occurs when algorithm developers "inject inherent values into rules", meaning developers may drive the algorithm based on their biases or specific objectives towards certain groups.

Objective Algorithmic Discrimination: More common than subjective discrimination, it arises as the machine learning mechanism evolves and continuously updates large amounts of data in real-time. Poor quality data collection and processing, or blind spots in algorithm design, can result in unfair treatment

of certain groups.

2.3 E-commerce Platform Operators

These are entities (legal or non-legal organizations) that provide network operation venues, transaction matchmaking, and information dissemination services during e-commerce transactions, enabling parties to engage in trading activities.

3. Analysis of Algorithmic Discrimination and Unfair Competition Issues

3.1 High Concealment Leading to Difficulty in Rights Protection

Almost every e-commerce platform keeps its algorithms confidential, creating barriers between consumers and algorithms, complicating rights protection efforts. Algorithms, written as source code by developers, inherently reflect the developers' intentions. Therefore, under the support of artificial intelligence algorithmic technology, it is more likely to form a variety of algorithmic backstabbing, price discrimination, algorithmic injustice under the 'algorithmic black box', and even the phenomenon of improper profit-making and transaction-induced fraud.

Despite consumer awareness of algorithmic discrimination, legal disputes arising from it have been increasing in recent years. The growing consumer rights consciousness helps address the issue, but the complexity and technicality of AI make it challenging for consumers to provide evidence to support their claims. Similarly, platform enterprises often use technical means to evade regulatory oversight and argue based on market changes, making it difficult for authorities to enforce the law and protect consumer rights.

Algorithmic discrimination and unfair competition remain prevalent. For instance, in February 2021, a popular TikTok influencer exposed Ctrip for charging higher prices to members than non-members for hotel bookings by 400-600 yuan. This sparked widespread discussion, with many users sharing similar experiences. Ctrip attributed this to a "technical glitch" without providing a satisfactory resolution due to the lack of concrete harm and evidence. The public largely believes that what is wrong about discrimination—both direct and indirect—is

that it relies on inferences about individuals based on generalizations about the groups to which they belong [4].

In another instance, in September 2021, the Weekend Hotel app reported Ctrip to the 12315 consumer protection hotline for unfair competition and market monopoly due to Ctrip's "choose one from two" practice. Ctrip allegedly warned hotels to delist from Weekend Hotel or face algorithmic restrictions like canceling special branding or reducing traffic. Despite substantial evidence, Weekend Hotel's rights protection efforts were thwarted by Ctrip's claim that it was the hotels' independent decision, showing no proactive measures or apologies.

Therefore, the improper application of algorithmic technical means of artificial intelligence technology will not only harm the individual rights and interests of consumers, but also undermine the market order and lead to disorderly competition. Super-platforms such as Ctrip, with their strong technological foundation and high market position, often use their market position to create monopolies and intellectual property barriers in competition. Relevant cases are common, further indicating that algorithmic discrimination by superplatforms is both covert and destructive, and that laws and regulations are urgently needed to regulate it.

3.2 Lack of Targeted Legal Regulations

Currently, several Chinese laws have recognized algorithmic discrimination and attempted to address related legal relationships by supplementing clauses. However, they still lack targeted regulations. The U.S. Civil Rights Act has long clearly stipulated that the Act applies to most employers and prohibits employment discrimination based on race, color, religion, gender or nationality, even in the field of algorithmic application, and extends to people with criminal records[5]. Most existing laws impose obligatory norms, making provisions for consumer rights protection without specifically addressing algorithmic discrimination and unfair competition under AI, leading to weak practical operability.

Algorithmic discrimination primarily infringes on personal consumer rights protected under the "Law on the Protection of Consumer Rights and Interests of the People's Republic

of China." This law mainly affirms consumers' rights to know and fair trade, prohibiting platforms from infringing on consumer rights. The "E-commerce Law of the People's Republic of China" requires e-commerce operators to provide options that are not tailored to personal characteristics when offering search results based on consumer traits. This marks the first legal regulation of personalized recommendations by e-commerce platforms. However, these laws still fall within the scope of requiring platforms to "do what they should," without effectively regulating platforms' inaction.

The Wei Zexi incident remains a high-profile example. This tragic event, caused by incorrect medical information prioritized by Baidu's SNS and SEO mechanisms using algorithmic technology, resulted in improper treatment. The legal responsibility for Baidu's improper algorithm application remains unresolved, relying on the now-abolished "Tort Liability Law" and the "Advertising Law." Current laws often only require internet companies to exercise caution without imposing additional legal responsibilities for algorithmic promotion and search.

The 2022 amendment to the "Anti-Monopoly Law of the People's Republic of China" adds that operators with market dominance must not use data, algorithms, technology, and platform rules to engage in behaviors that abuse market dominance, addressing algorithmic discrimination by dominant e-commerce platforms.

In summary, while existing laws address algorithmic discrimination and unfair competition, they lack targeted provisions and still have regulatory loopholes, making it difficult to effectively regulate algorithmic discrimination legally.

3.2 Lack of Unified Administrative Supervision

The difficulty in forming effective regulations at the legislative level leads to fragmented administrative regulation, causing inconsistent management. For instance, under the "E-commerce Law," the regulatory authority for algorithmic discrimination is the market supervision administration, while the "Pricing Law" assigns oversight of price discrepancies due to algorithmic discrimination to price management departments above the county

level. This multi-headed administrative regulation results in inconsistent enforcement intensity. Consumers' difficulty in providing evidence against platform algorithmic discrimination further complicates judicial relief. Algorithmic discrimination, providing significant profits to companies, could become a prevalent strategy among internet companies, undermining market order and worsening the business environment amid intensified competition and weak enforcement.

3.3 Internal Management Issues within Enterprises

On more conditions, the decision-maker's intent is key to discrimination [6]. Algorithmic discrimination objectively increases revenue for companies, leading to a laissez-faire attitude towards its management. Algorithms, essentially sequences of computational steps, are increasingly considered trade secrets due to their profitability, fostering unhealthy industry practices.

In reality, large platform enterprises with market dominance often have numerous functional departments and strict assessment mechanisms, promoting "healthy competition" internally. Consequently, departments may adopt various means to meet performance targets, and managers may encourage such phenomena, leading to the emergence of unfair competition tactics like algorithmic discrimination. Additionally, differences in communication and authority among internal departments can result in internal management issues, preventing managers from effectively preventing and curbing the misuse of algorithmic technology.

4. Discussion on Addressing Algorithmic Discrimination and Unfair Competition

4.1 Enhancing Algorithm Interpretability

According to the Personal Information Protection Law, companies must ensure transparency and fairness in automated decision-making processes using algorithms on personal data. However, algorithms operate behind the scenes of software programs, making them inaccessible to ordinary users except for professional developers. That is, algorithmic decision making is "black box," meaning that while we may know what the computer processed and what the outcome was,

there is currently no external audit system or regulation to assess what happened to the data during processing [7].

Despite the technical barriers inherent in algorithms, making them comprehensible to the average consumer even if disclosed, exposing the source code or architecture might harm the company's interests. Competitors could exploit the disclosed algorithms, undermining the rights of the disclosing entity. Therefore, in the current societal and market context, requiring companies to fully disclose their algorithms may not be practical. Instead, addressing the opacity of algorithms should focus on enhancing their interpretability, ensuring consumer rights to information while protecting the legitimate interests of companies.

At the user and consumer level, the key to increasing the interpretability of algorithms lies in the positive interpretation and disclosure of the algorithmic decision logic and system, i.e., making one's privacy policy transparent in an unspecified codified form. We can see that the extensive coverage of gender and other biases in language corpora used to generate word embeddings is an example of representational fairness [8]. For instance, Apple informs users on relevant pages and menus about what types of personal information the company uses to achieve certain software functionalities or user experiences. Additionally, Apple warns users about which data is being accessed by the algorithm in secondary menus during user operations. This approach is considered a good attempt at enhancing algorithm interpretability, as it informs users about the types, bases, and purposes of personal data usage, ensuring consumer rights to information while increasing algorithm transparency.

4.2 Strengthening Regulation of Algorithm Application

The root cause of algorithmic discrimination and unfair competition lies not in the algorithms themselves but in their misuse by relevant entities. Although the Anti-Monopoly Law regulates algorithm applications, it primarily focuses on macro-level issues, such as market order protection, by regulating algorithmic price discrimination and monopolistic behaviors from a neutral perspective. Therefore, specific regulations

targeting algorithm application and compliance restrictions are needed to complement the existing Anti-Monopoly Law, creating a dual governance framework.

With the continuous advancement of algorithm technology, many platform service providers have expanded into increasingly complex fields. For example, Alibaba controls 31 well-known brands across various sectors, including financial services, retail, e-commerce, cross-border e-commerce, smart health, and cloud storage. The single regulatory framework of anti-monopoly laws struggles to keep up with the rapid development of the internet. It is urgent to adopt diversified governance approaches for algorithm application. Regulatory authorities should improve top-level design, formulating policies on market competition, data protection, data sharing, business operations, and financial stability [9]. At the same time, strict review of relevant information invested by super e-commerce platforms on the Internet will be strengthened [10].

The National Development and Reform Commission's 2022 opinion on promoting the healthy and sustainable development of the platform economy emphasizes regulating business entities from the perspectives of market competition, financial security, data, and algorithms. This further demonstrates the need for strengthened algorithm application management.

Thus, it is suggested to:

- (1) use the Anti-Monopoly Law for macro-level regulation and introduce relevant laws to address specific micro-level issues of algorithm operation and application;
- (2) establish a unified administrative regulatory system, granting specific regulatory bodies higher and more uniform enforcement authority, and enhancing enforcement strength and precision;
- (3) improve remedial measures, strengthening the rights of users and consumers, such as the right to information, and continuously improving remedial and protection methods;
- (4) draw on international legislative and judicial experiences. For instance, the United States' Platform Competition and Opportunity Act (PCOA) of 2021 specifies that companies must not misuse algorithms to harm users' legal rights, and users are entitled to remedies under this law when their rights are infringed.

In the common law countries, the bill has been a lot of jurisprudence: earlier, the court of justice of the European Union also ruled that the Internet company in its push information content knowledge, and through algorithmic technology and other means can control the content, need to bear the corresponding legal responsibility. The above experience can provide a good lesson for China's legislation in related fields.

4.3 Strengthening Internal Corporate Responses

For enterprises, algorithm technology is a double-edged sword. While algorithms can enhance market competitiveness and accurately perceive user needs, leading to increased profits, their misuse can result in legal penalties. Therefore, companies, as developers and users of algorithm technology, should pay attention to compliance points.

Enhancing human intervention in algorithms can mitigate algorithmic discrimination issues. Companies should establish corresponding regulatory measures when applying algorithm technology commercially. Human intervention is a cost-effective and quick solution, involving regular checks of algorithm operations by engineers to identify and address algorithmic vulnerabilities, providing technical suggestions, and alerting managers and decision-makers to risks. Human-machine complementary internal supervision can quickly resolve consumer rights disputes, such as algorithm-induced price discrimination, by promptly intervening to appease consumers and correct algorithmic pushes, reducing losses for both parties.

Furthermore, establishing an internal industry association for algorithm technology safety assessments is beneficial. Given the widespread application of algorithms, human intervention cannot cover all scenarios. A strong regulatory association within the industry can meet the technical and compliance requirements for algorithm management. This practice has precedent in algorithm-driven fields like autonomous driving technology, which is strictly regulated due to public safety concerns. China's Intelligent Connected Vehicle Road Test Management Specification (Trial) strictly regulates and restricts algorithm applications in autonomous driving. In the new energy

vehicle industry, companies have even stricter internal standards for such technologies. Therefore, setting industry standards for algorithm management within the internet sector and strengthening internal regulation is essential.

5. Conclusion

With the continuous application of artificial intelligence technologies such as machine learning, deep learning, and algorithmic decision-making, more and more consumers have found that injustices in the algorithmic society are rampant, and algorithmic discrimination and unfair market competition are common. Algorithmic discrimination and unfair competition issues are prevalent. Due to their technical complexity and opacity, algorithms can cause "algorithmic black box" phenomena, leading to consumer rights violations and difficulties in rights protection, and disrupting market order. The lack of specific legislation and fragmented administrative regulation hinders legal remedies and protection functions, while internal corporate management is relatively chaotic.

Therefore, regulators should improve top-level design, using legal means to regulate corporate behavior and protect consumer rights. Companies should enhance self-management, cooperate with administrative regulatory bodies to handle algorithm applications transparently and interpretably, ultimately fostering a multi-governance market environment that promotes healthy development in algorithm management practices.

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