# The Research of Big Data Discrimination Based on Digital Economics

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**Abstract:** With the development of mobile Internet and cloud computing technology, big data has been widely used in the business field. In the application of big data technology in commercial activities, the phenomenon of big data killing damages the rights and interests of consumers and violates business ethics. From the perspective of economics, this paper analyzes the logic behind the phenomenon of big data ripening, discusses its operation mechanism and methods, and discusses how to protect the rights and interests of consumers and the laws and regulations that limit the occurrence of big data ripening. Finally, this paper puts forward a vision and opinion on the future.

## 1. Introduction

In normal days, with the generalization and promotion of the Internet, Internet of Things, mobile Internet, electronic commerce, social platform, and other network information, a large number of data information was accumulated by various industries of society during the process of Informa ionization for decades. The era of big data is coming, the traditional data processing and analysis technologies have changed and developed rapidly to meet that massive amount of data. The result of this background is the big data discrimination phenomenon. For different user viscosity, enterprises tend to provide high prices to old customers, on the contrary, providing a large number of subsidies to new customers. In other words, they use old customers' profits to attract new users and occupy the market share, thereby maximizing their incomes. In the digital economy, because the collection of data, analysis, and processing is becoming universal and mature, the users' painting is clearer and customer surplus-value is completely expropriated. It is hard for customers to detect these phenomena for the information asymmetry makes big data discrimination more hidden, which leads to the potential for privacy breaches and the difficulty of maintaining legal rights.

In the recent Double Eleven shopping festival, a consumer from Beijing used a JD plus account to buy a product on the platform. It showed that the price of the product was 122 RMB. When checking out, he changed a non-plus account that was not commonly used to buy it. It was found that the price was cheaper 25 RMB than using a plus account. In this regard, we have verified that the Jingdong platform has the phenomenon of price discrimination by analyzing some JD data. However, most of the current academic researches about price discrimination based on big data only started from a single point of views such as economics, law, and ethics. This article summarizes the perspectives of previous research on the field and clarifies the impact of different aspects on it, and comprehensively explains the overall research topic, so that propose a clear context structure for later scholars to refer to and study. On this basis, we put forward the trend, future development, and evolution of the research about price discrimination based on big data.

## 2. Present state

A data brokering sector has sprung up as a result of the widespread use of personal data. Some businesses are either constrained in their abilities to collect and analyze data or do not believe it is

cost-effective to do so on their own. Various data-collecting tools make it easier for retailers or data collectors to track customers online and apply customized pricing and marketing. In the online market, some retailers even use consumers' data to price-discriminate [6]. Simultaneously, the extensive usage of personal information raises severe privacy issues among customers. Consumers may be subjected to aggressively targeted marketing and tailored pricing when their data is obtained. Consumers resent this because they may be charged a higher price than their anonymous peer buyers. To prevent being tracked, they might remove cookies in their browser or use anonymous payment services [7]. Price discrimination based on consumers' data has drawn the attention of legislative authorities [8]. In 2004, Shiller points out empirical evidence that web browsing data provides firms with more knowledge on customer willingness to pay than "old school" demographic data, resulting in a 12.2 percent boost in profits.

Furthermore, in the market for a homogeneous product, two duopolists compete on price. They can "profile" customers, or identify their values with a high degree of certainty. Both firms obtain positive anticipated profits at equilibrium if they can profile consumers with diverse talents. This gives a rationale for companies to share data about customers (partially and unequally) or for data brokers to sell various customer insights to competing companies [9]. Consumers prefer that both firms profile the same set of customers or that just one firm profiles customer since marginal cost pricing is involved (so does a policy requiring list prices to be public [10]. By examining price competition in a homogenous goods setting in which firms can imperfectly profile consumers, Jing finds firms can charge these consumers a personalized price, but firms (potentially) differ in their ability to profile. Because of the asymmetry in the firms' profiling technology, there is uncertainty about the nature of price competition, resulting in market power. Price competition and imperfect consumer profiling, which refers to the assumption that firms can determine customers' product valuations but only in an incomplete way, are required elements for this result. Consumer profiling allows for price discrimination, but because it is imperfect, firms are unsure of their competitors' pricing strategy, which leads to strategic random pricing. To summarize, unequal and/or imperfectly correlated profiling technology can generate a way out of the Bertrand paradox as long as both firms can follow consumers. Our findings also suggest that when only one company can profile customers, it would not be able to gain market power.

## 3. Method

As big data penetrates all aspects of modern society, people's daily necessities, food, drink, and entertainment cannot be without software and smart devices. The massive amount of fragmented data is being mined, integrated, and analyzed, to constantly generate new valuation. On the one hand, it makes people's work and life more convenient and efficient, however, it also brings new problems to people's daily life. big data discriminatory pricing (BDDP) occurs frequently, and the algorithm turns into a calculation.

Members need to pay more than non-members even with the same meal delivery time, location, order, and takeaway platform. Not long ago, some netizens discovered that after registering as a member of a group buying platform, compared with non-members, not only did the fee of takeaway discounts are decreased, the delivery fee has higher than before. This event quickly caused discussion on the Internet, and netizens complained that it was not an accident. By using the same type of car to get to the same destination in the same place at the same time, it has been discovered by users that regular customers charge higher fees on a certain taxi platform. Some time ago, a video of "wearing a helmet to watch the apartment" on an Internet platform sparked the public argument. The video publisher said that this comedic act was a helpless protest against the "hidden rules" of the sales office. The sales office used face recognition to collect data to analyze the types of customers. Different types of customers such as real estate "old and new", commercial intermediaries, and natural buyers can get different degrees of purchase discounts. For another example, some illegal behaviors put on the big data "vest", and they turned into glamorous commercial technology. Qiao Technology, which claims to use "big data" and "cognitive engines" to master 220 million natural persons' resumes, is bankrupt.

"This company uses the name of recruitment to obtain a large number of citizens' resumes, then, used so-called big data methods to classify personal information and sell them to third parties. Compared with traditional direct sales of customs information, businesses use rule-making power and algorithm technology to package themselves, so that confuse the public and make the illegal industry chain longer and more professional.

## 4. Function

Membership can skip a few minutes of advertisements when we use video apps to watch TV shows; membership can save little money in delivery fees when they order takeout food by takeaway apps. All membership mechanisms are for the consumers to make our life more comfortable. However, some companies just use the membership mechanism to personalized pricing by big data and finally lose the trust of customers. Previously, an article titled "I was treated by the membership of Meituan" revealed that the same store on Meituan used the same delivery address at the same time, but members had a higher delivery fee than non-members. According to the article, the author thought that buying a takeaway member would save money, but the delivery fee of almost all nearby takeaway merchants was 1-5 yuan higher than that of non-members. Moreover, as a platform, Meituan can earn huge profits from all three parts: sellers, customers, and couriers." Stuff from Meituan said that Meituan will charge customers a membership fee at first; then Meituan will let restaurants issue coupons; at the same time, Meituan also limits time delivery service, and the delivery staff is required to deliver the orders of the member customers on time. If the orders are not delivered on time, the rider will be fined. Therefore, the membership system now is the most common mechanism of big data.

## 5. Law

Legally speaking, we always support fair competition with good faith, and we oppose fair competition that violates good faith. No matter that is General Principles of Civil Law, or the Consumer Protection Law, the Anti-Unfair Competition Law, the E-Commerce Law, and other laws all have stipulated the principles of good faith. So that, the first point that big data discrimination violates the law is the principles of good faith. In addition, what is behind big data discrimination is price fraud. Article 3 of the Provisions Prohibiting Price Fraud also stipulates that "the behavior of price fraud refers to the act of the operator to deceive or induce consumers or other operators to engage in transactions with them using false or misleading list prices or price means. "Can be seen that merchants use big data to do this "price adjustment" for the familiar customers, which is essentially a kind of price fraud. Finally, big data discrimination is an infringement of consumer rights, including:

### 5.1 Right of Privacy

Article 29 of the Law of the PRC on the Protection of the Rights and Interests of Consumers stipulates that" Business operators shall collect and use the personal information of consumers lawfully and properly by following the principle that information collection or use is genuinely necessary. They shall expressly state the purposes, methods, and scope of information collection or use, and obtain the consent of the consumers whose information is to be collected. To collect or use the personal information of consumers, business operators shall disclose their information collection or use personal information of consumers, business operators shall disclose their information collection or use agreements between the parties concerned.

Business operators and their staff members shall strictly keep confidential the personal information of consumers collected, and shall not divulge, sell, or illegally provide others with the same. Business operators shall take technical measures and other necessary measures to ensure information security and prevent the personal information of consumers from being leaked or lost. They shall immediately take remedial measures where information has been or may be leaked or lost. Business operators shall not send commercial information to consumers without their consent or request, or after the consumers have expressly refused to receive such information.

Ms. Shen bought tickets for her colleagues on the morning of August 9, 2018. On the same day, at 10: 15 a.m., she received a mobile phone message signed by ' Eastern Airlines ', which was informed that the flight was canceled, and the contact customer service was asked to resign or refund the ticket. After that, Ms. Shen, under the guidance of swindlers to open Alipay intimate payment function and bank card online banking function, has been transferred 120,000 yuan. Later, Ms. Shen appealed to the court together with Ctrip and Alipay to ask the two companies to jointly and severally compensate for economic losses and apologize for the compensation of CNY 10,000 for spiritual damage. After the trial, the Chaoyang court believed that Ctrip had loopholes in the implementation of information security management. It did not fulfill its obligations of personal information storage and prevention of leakage. It had faults and should bear tort liability. It awarded Ctrip 50,000 yuan in compensation for Ms. Shen's s economic loss and apologized to her for compensation. This case reflects the vast number of users of information security exists serious security risks.

## 5.2 Right to Be Informed

Article 8 of the Law of the PRC on the Protection of the Rights and Interests of Consumers stipulates that" Consumers shall enjoy the right to obtain true information of the goods they purchase and use or the services they receive. Consumers shall have the right to demand business operators, in light of the different conditions of goods or services, to provide their prices, origin, manufacturers, usage, functions, standards, grades, main ingredients, date of production, term of validity, certificates of inspection, operation instructions, after-sale services or information relating to contents, standards, and costs of the services. For example, there was a case of ticket overbooking of China Southern Airlines. Due to the overbooking of tickets by China Southern Airlines, Mr. Xiao of Beijing took the ticket to change the boarding pass but was told that the plane was full. Mr. Xiao stayed at the airport for more than two hours before taking another flight. Finally, the court found that Nanchang damaged the consumer's right to know, constitute a contract breach, compensation for Mr. Xiao 1300 yuan.

## 5.3 The Right of the Fair Trade

Article 10 of the Law of the PRC on the Protection of the Rights and Interests of Consumers stipulates that" Article 10 Consumers shall enjoy the right of fair dealing. Consumers shall, in their purchasing goods or receiving services, have the right to obtain fair deal prerequisites such as the guarantee of quality, reasonable prices, and correct measurement, and have the right to refuse any compulsory transaction of business operators. On August 9, 2012, Li Xiaodong purchased six bottles of liquor sold by Jiuxian Electronic Commerce Co., Ltd. (hereinafter referred to as Jiuxian Company) on Taobao. com. The online commodity page was described as [ liquor Chinese famous brand 52 degrees Wuliangye (1618) 500 ml special price], and the transaction price was CNY 8,349. After the completion of the transaction, Li Xiaodong queries the above page found that the liquor purchased in Jiuxian company Taobao shop marked the goods ' special price and original price ' equal, so to the Beijing price reporting center. After that, Li Xiaodong and Jiuxian company reached an ' understanding agreement ', agreed that the parties within 5 days after the signing of the agreement to complete the return, refund procedures, Jiuxian company compensation Li Xiaodong 8394 yuan, if one party default, bear the total amount of 20 % of the liquidated damages. Because Jiuxian Company failed to fulfill the agreement, Li Xiaodong sued the People's s Court of Binhai County, Jiangsu Province, requesting Jiuxian Company to compensate 8394 yuan and bear the liquidated damages of 1678.8 yuan. The Court held that the principle of voluntariness, equality, fairness, and good faith should be followed in dealings between operators and consumers. In the course of trading, operators shall provide consumers with real information about commodities and shall not make false publicity.

The E-Commerce Law stipulates that:" The department for market regulation shall order an e-commerce operator to make corrections within the required time limits and confiscate its illegal gains, and may additionally impose a fine of more than CNY50,000 but less than CNY200,000. If it displays search results in violation of the first paragraph of Article 18 or sells tie-in commodities or services in violation of Article 19; If the case is serious, the fine may be increased to more than CNY200,000 but less than CNY500,000. In other words, if there are some conditions that big data discrimination

happens, there are two kinds of penalties: (1) ordered to make corrections within a time limit (market supervision and management department), confiscate its illegal income, and imposing a fine of more than 50,000 yuan, but up to 200,000 yuan; (2) if the circumstances are serious, the fine may more than 200,000 yuan but less than 500,000 yuan.

## 6. Conclusion

The big data discrimination phenomenon is the product of strong price discrimination under the background of the big data era, and it is particularly common in the Internet economy. Many platforms use ' membership ' to do big data discrimination, which is price discrimination against members. At present, laws and regulations mainly restrict the occurrence of big data familiarization from the three aspects of privacy, the right to be informed, and fair trade. For the majority of users, we put forward suggestions on how to prevent the phenomenon of big data maturity in the consumption process and how to do it after the occurrence of big data maturity. For enterprises, should not rely too much on information collection and the use of big data polarized, which is not conducive to the establishment of a good image of enterprises and easy to cause the loss of corporate reputation. Finally, we give some suggestions to prevent the occurrence of big data murder: First, optimize the traditional regulatory model. Second, strengthening the construction of data information systems; third, establishing effective ways of information sharing. If big data discrimination becomes the norm of Internet enterprises, it will damage consumers' confidence in the Internet economy and return to offline enterprises, thus affecting economic development.

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