

Application and Analysis of Price Discrimination in China's E-commerce based on Big Data Analysis

Yutong Wang^{1,*}

¹Macquarie university, Sydney, new south wales, Australia, 201101

*Corresponding author. Email: Yutong.wang1@students.mq.edu.au

ABSTRACT

Taking China's e-commerce industry as the background, this paper provides new insights into price discrimination with Chinese characteristics based on big data analysis and its application. China's e-commerce industry is in a leading position in the world and its development is extremely mature. Big data is the key technology to support industrial development. Based on this background, the concept of price discrimination combined with big data applications also has new practical applications. This paper uses induction and investigation methods to explain big data discriminatory pricing. Finally, this paper draws a conclusion that price discrimination based on big data technology is beneficial to the market and consumers.

Keywords: *Big data analysis, e-commerce, price discrimination*

1. INTRODUCTION

Price discrimination is a stale topic. Nevertheless, the practical and theoretical application of price discrimination is changing as big data technology is becoming more mature and widely used.

China is the country with the most extensive and deep application of e-commerce and system. Based on this, this article will first describe the practical application of big data in e-commerce and the changes of price discrimination under this condition, and then the actual

situation and cases of price discrimination under the advantage of big data. Finally, it analyzes the impact of price discrimination on the market, consumers and national policies. This paper can help consumers and the market better understand the existence of price discrimination in e-commerce forms and benefits.

2. BACKGROUND REVIEW

With the development of Electronic Science and technology in China, e-commerce has also undergone greater changes.

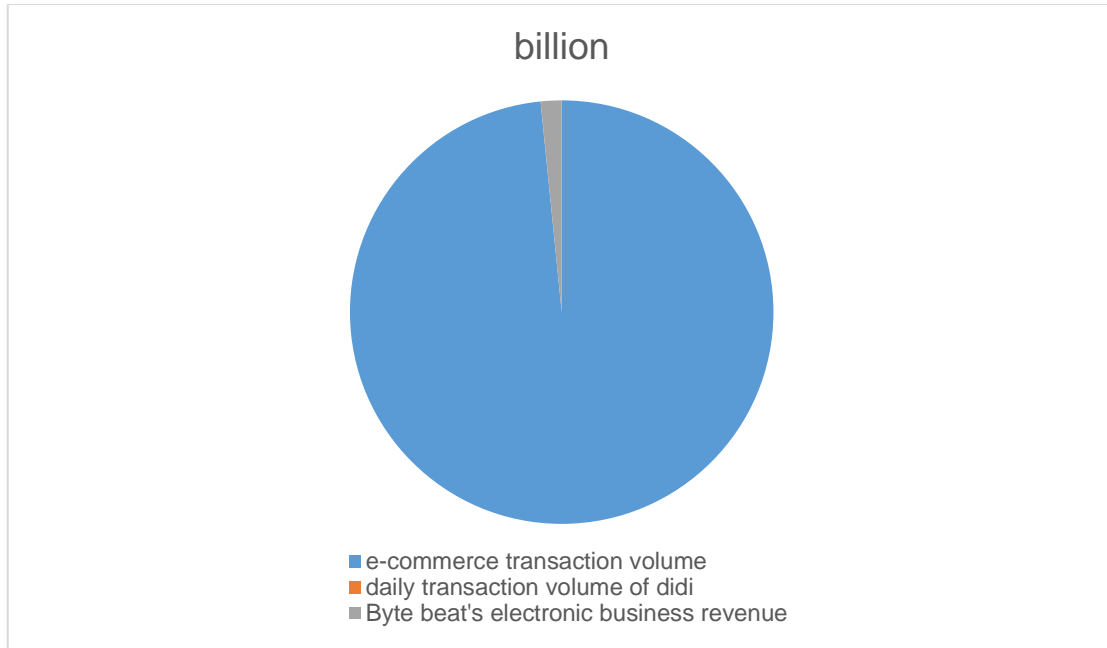


Figure 1 Daily transaction volume

The daily transaction part is relatively small, so it cant show in chart. Figure 1+the transaction volume

At present, China's e-commerce is booming. China's e-commerce transaction volume will reach 37.21 trillion yuan in 2020 according to China's e-commerce report 2020. Relevant Internet sales are also growing. By the end of the first quarter of 2021, the average daily transaction volume of DIDI had reached 41 million in accordance with DIDI travel prospectus. Byte beat's electronic business revenue will reach 6 billion in 2020 in line with byte beat annual report. In the past few years, it was almost impossible to achieve perfect price discrimination that is set the price according to each customer's willingness to Pay to maximize profits. Because it is very difficult to collect each consumer's price sensitivity and willingness to pay. However, in the current e-commerce market, big data can automatically track each user's preferences and price acceptance, and convert them into their own customers [9]. Even in quantitative discrimination Which is the monopolist divides the consumer demand curve into different segments and determines different prices according to different purchase quantities.the implementation is extremely single due to underdeveloped information and imperfect mechanism. However, with increasing numbers of people using e-commerce in recent years, a variety of activity mechanisms including quantitative discrimination have emerged. The current big data classification is mainly composed of touchpoints [6]. Big data technology can identify the records of each customer. People's individual motivations are determined by their unique performance, personality characteristics, economic situation, culture and lifestyle

Therefore, accurately identifying everyone's touchpoint can push relevant goods and services more

accurately[5]. At present, the popular "headlines" products in China classify users based on touchpoint. the unique user portrait of individuals will be analyzed through users' browser history such as different contents, keyword search, likes and comments. For example,one portrait of a user might be like this: Eunice, a 25-year-old female who living alone in Shanghai, likes coffee and pays attention to stocks, Jimmy Choo, luxury second-hand stores. And she is FMCG employees and learning to drive. For example, touchpoints of tiktok, Taobao's for a user will be presented in this way through browser history.

3. THE APPLICATION OF PRICE DISCRIMINATION IN E-COMMERCE IN CHINA

Perfect price discrimination can not be completely achieved so far, because the accurate analysis is difficult and the cost is too high. therefore another method is used by taboo to make it infinitely close to price discrimination. The perfect price discrimination used in Taobao is mainly reflected in the application of big data and algorithm technology--accurately capturing customers' preferences through the touchpoint mentioned above and analyzing the price range which is acceptable to users through purchase records and commodity browsing records. In most cases, insensitive users rarely deliberately choose to browse products at a low price. On the contrary, users almost choose products in the range drawn by big data. Therefore, although Taobao does not set a price for each user, it only recommends some products through the analysis of its touchpoint, which makes its uesers unable to make more choices. Taobao has one or two full reduction activities almost every month, such as the activities for 15% off. Customers who

are sensitive to the price will collect the goods they need until there is a discount.

Moreover, many customers will buy goods they do not need because of the activity discount. In line with the three-level price discrimination that is, for the same commodity, the company implements different prices according to the different price elasticity of demand in different markets. It is realized by membership cards launched by Taobao and grabbing preferential tickets through activities. Many customers who are sensitive to the price will spend more time and energy in the coupon activities to get the coupon. Once customers buy the membership card, they will enjoy more discounts than others.

In 2020, Didi Travel company was revealed that users using Apple and Android at the same time and on the same trip were charged different prices: Apple users paid more money than Android users. Its price mechanism believes that users using Apple mobile phones will not give up taking a taxi because the price is slightly expensive. In addition, Didi Travel's motorcycle brand also involves price discrimination. It has a basic price, but it will also specify different prices according to the difference between the rich and the poor and the difference in residents' acceptance, so as to achieve three-level price discrimination. Furthermore, Didi Travel company opened up a new brand for taxiing called Flower Pig. This platform charges less than Didi Taxi in some long-distance travel. It virtually classifies customers and formulates their preferred price to achieve price discrimination.

China has many social networking platforms such as TikTok, Kwai Fu, Little Red Book and even Weibo. Although the presentation forms are different, it is essentially the output of content and combined with live broadcasting to achieve the purpose of commodity trading. In 2021, social e-commerce transactions reached 2864.6 billion RMB, and its affiliated live broadcasting platforms reached 2854.8 billion RMB. The principle of these platforms is to accurately push videos and even live links for customers according to their portraits. On the surface, it is a kind of social content sharing, in point of fact, it is designed to recommend some goods purposefully or aimlessly through the shared content. Coincidentally, links or purchase channels of the products can be found by visitors under the shared content. In other words, the videos recommended by the platform are invisible commodities. As a result, this leads to a mass of transactions on the social platforms.

4. THE INFLUENCE OF PRICE DISCRIMINATION ON E-COMMERCE FOR CUSTOMERS

In a perfectly competitive market, complete price discrimination can improve market efficiency and does

not reduce market welfare. Only in this case, all the surplus is occupied by businesses, which undoubtedly infringes on the rights and interests of consumers. The third trial of the draft e-commerce law just launched in China in 2021 added the provision that "e-commerce operators shall provide consumers with options not specific to their personal characteristics and respect and equally protect the legitimate rights and interests of consumers when they sell goods or services to consumers according to their interests, hobbies, consumption habits and other characteristics" However, it is impossible to fully protect consumers' rights and interests and the right to know. The idea of protecting consumers' right to know is also difficult to realize, because the price difference caused by big data belongs to market knowledge [8]. The idea of protecting consumers' right to know is also difficult to realize. Market knowledge is a kind of pricing power for businesses. The extra consumer surplus obtained by using big data pricing is a premium of this power (how to regulate the killing of big data). This can be compared with the cartel phenomenon. The following will reflect the rationality of big data price discrimination through the comparison with the cartel phenomenon. Professor Posner believes that "the continuous price discrimination is different from the cheating behavior of cartels, and the continuous discount situation of cartels is the real cheating". Cartel phenomenon is that some enterprises jointly reduce output to promote price increase when they occupy the vast majority of resources in the market. This has changed the whole market structure and reduced the welfare of the market and customers, which is the real damage to the market. As it is said, the biggest difference between the killing of ripe crops prevailing in big data and cartels is that price discrimination does not change anything in the original market structure, but takes the consumer surplus as its own. Even on another level, with the help of big data, perfect price discrimination reasonably allocates market resources and gives humanistic care to those vulnerable groups (how to regulate the killing of big data). Therefore, for consumers, from the perspective of market knowledge, consumers should be more clearly aware of this problem. Because the application of big data not only makes businesses know consumers' information like the back of their hands, but also makes market information more transparent to consumers. Therefore, the best solution for consumers is very simple, that is, they should be vigilant to the market. After all, everything is determined by the willingness of consumers. Each consumer's evaluation and market knowledge are also different, so when they try to master more information, they can avoid the "unfair" psychology caused by price discrimination.

5. CONCLUSION

This paper expounds on the application and phenomenon of price discrimination in e-commerce

based on big data in China. It can help consumers and the market objectively understand the practical application and impact of price discrimination. This article is based on China's national conditions, which may require a more accurate grasp of the data. Price discrimination not only promotes the development of e-commerce and profits to a certain extent, but also gives consumers a better experience when shopping. Although its use of big data technology infringes on the interests of consumers in a way, it is a good promotion to the overall market environment. With the continuous improvement of Chinese laws and regulations and the continuous enhancement of consumer awareness, consumers will get more different benefits from big data and price discrimination.

ACKNOWLEDGMENTS

Thank my parents Wang Yang and Ma Dongmei for taking care of me in spirit and life, and thank my family for their encouragement all the time. Thank the teachers for their guidance on this paper and Zheng Bowen for comforting me when I am anxious. Thank my good friends for their spiritual support.

REFERENCES

- [1] Bar-Gill O. Price discrimination with consumer misperception[J]. *Applied Economics Letters*, 2021, 28(10): 829-834.
- [2] Hannak A, Soeller G, Lazer D, et al. Measuring price discrimination and steering on e-commerce web sites[C]//*Proceedings of the 2014 conference on internet measurement conference*. 2014: 305-318.
- [3] Hinz O, Hann I I H, Spann M. Price discrimination in e-commerce? An examination of dynamic pricing in name-your-own price markets[J]. *Mis quarterly*, 2011: 81-98.
- [4] Posner R A. *Antitrust law*[M]. University of Chicago press, 2009.
- [5] Buhalis D, Volchek K. Bridging marketing theory and big data analytics: The taxonomy of marketing attribution[J]. *International Journal of Information Management*, 2021, 56: 102253.
- [6] Akter S, Wamba S F. Big data analytics in E-commerce: a systematic review and agenda for future research[J]. *Electronic Markets*, 2016, 26(2): 173-194.
- [7] China 2020 e-commerce Report <https://dzswgf.mofcom.gov.cn/news/5/2021/9/1631698018580.html>
- [8] Hayek,F.A,"t he use of knowledge insociety", *American Economic Review*,Vol..35, No.4,1945,pp.519-530
- [9] Jao, J., (2013). Why big data Is A must In ecommerce. Available at: <http://www.bigdatalandscape.com/news/why-big-data-is-a-must-in-ecommerce> (Accessed 2nd of March, 2016).