

Impact of Consumer Data Value on Pricing of Platform Enterprise

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Abstract

Based on the background of digital economy, this paper mainly discusses the value of consumer data and the promotion effect of digital finance on enterprise entrepreneurship, and analyzes the differentiated choice of pricing strategy for platform enterprises under the situation that consumer data is known and unknown. Based on the linear city model, circular city model and vertical differentiation model, this paper constructs the competition system of platform enterprises in two situations: consumer data is known and consumer data is unknown, and reveals the influence of consumer data on the pricing strategy of platform enterprises. The research shows that consumer data can influence the pricing strategy of platform enterprises, and when consumer data is unknown to platform enterprises, they tend to choose unified pricing. At this time, consumers choose service types based on their preferences. If consumer data is known to platform enterprises, platform enterprises will choose personalized pricing in order to compete with consumers in the market, but the price will be low, which will increase consumer welfare at the micro level. Moreover, the development of digital finance based on the background of digital economy has a positive role in promoting new enterprises and affecting consumer welfare at the macro level, it has practical significance and profound research significance for the study of social welfare changes.

Keywords

Data Value; Linear city model; Circular city model; Vertical differentiation model.

1. Introduction

At present, the digital economy has become an important driving force to promote a new round of scientific and technological revolution and industrial transformation, and it is constantly expanding in breadth and depth in all fields of economy and society. In this context, countries all over the world have taken the development of digital economy as an important measure to promote economic development and reshape core competitiveness. China government has also fully grasped the opportunity of digital economy development, innovated and developed new modes of industrial digitalization and digital industrialization, and new formats of digital economy development have emerged one after another. On January 12th, 2022, the Central Committee of the Communist Party of China and the State Council issued the Development Plan of Digital Economy in the 14th Five-Year Plan, which once again clarified the development direction of digital economy and its importance in the economic field, and proposed to continue to adhere to digital industrialization and industrial digitalization. In addition, the digital economy represented by big data, cloud computing, 5G technology and blockchain, on the one hand, accelerated the deep integration of modern information networks, digital technology and real economy, making new formats and industries. On the other hand, it reorganizes the factor mode that machines give people or machines replace people. The reorganization of factor resources essentially means the reorganization of income distribution, so it is of great significance to grasp the period of rapid development of digital economy to realize the high-quality development of national economy.

In addition, on April 9, 2020, the Central Committee of the Communist Party of China and the State Council issued the Opinions on Building a More Perfect System and Mechanism of Factor Marketization, which clearly regarded data as the key factor to promote the quality change and efficiency change of economic development, further demonstrating the importance of consumer data value. On the one hand, as a new factor of production, data has the advantage of availability compared with traditional factors of production, and the higher the frequency of use, the larger the data scale, and the faster the data update; On the other hand, data enhances the network effect of the platform. By analyzing consumer behavior through data, we can provide differentiated services according to consumer preferences and enhance the additional value of services. Furthermore, with the rapid development of digital finance, it has contributed to the transformation and development of enterprises in many aspects and contributed to the improvement of social welfare at the macro level. Then, in the economic society, how does consumer data affect the pricing strategy of enterprises? And when consumer data is known and unknown, will the pricing strategy of enterprises change? Further, will digital finance have an impact on enterprise entrepreneurship?

In order to discuss and study the above problems, this paper compares the pricing strategies of enterprises with linear city model, circular city model and vertical differentiation model, considering the two situations of known and unknown consumer data information, and further empirically analyzes the promotion of digital finance to enterprise entrepreneurship. It is found that consumer data information can affect the pricing strategy of platform enterprises. Generally speaking, when consumer data information is unknown, enterprises will choose unified pricing. When the consumer data information is known, enterprises will choose personalized pricing, but the price is lower at this time, which improves the welfare of consumers to some extent and improves the transaction efficiency of the market.

The content of this paper is arranged as follows: The second part mainly reviews the previous research literature; The third part is mainly research methods; The fourth part is mainly research conclusions and policy implications.

2. Review of Relevant Literature

2.1. The development of the digital economy

After the Second World War, the whole world set off a wave of commercialization of science and technology. With the improvement of a series of technical means such as calculation, storage, retrieval and encryption, the digital commercial network has taken shape and the digital economy has emerged. With the development of digital technology and Internet infrastructure, digital products and digital services are more closely related to people's daily life. The digital economy has achieved rapid development and improved the transaction efficiency of economic activities. At the same time, it also enables platform enterprises to achieve more dimensional development. On the one hand, the rapid development of platform economy has a positive impact on the digital economy, which can effectively reduce the transaction costs of the digital economy in economic transactions (1). On the other hand, through digital platform enterprises, more consumers can be attracted and consumption can be promoted. After the outbreak, offline production and consumption were blocked, and the "non-contact scene" represented by intelligence and unmanned was widely accepted with its obvious advantages, which profoundly changed the economic production mode, enterprise organizational structure and industrial value chain, created an effective tool for communication between manufacturers and consumers, and the industrial value chain changed from one-way linearization to multi-direction synergy, which was helpful to realize high-quality economic development (15). Based on the rapid development of the digital economy, consumer data is paid more attention, and the development of the digital economy is inseparable from consumer

data. At the same time, consumer data can maximize its value according to the digital economy (20).

2.2. Digital economy and data value of platform enterprises

With the gradual standardization and development of digital economy construction, China's digital economy has developed rapidly. The value of data is becoming more and more important in the economy and society, and it has gradually become an essential factor of production. Under the background of digital economy, the value of data privacy protection will also give platform enterprises further standardization and development. On the one hand, as an important carrier of digital economy, platform is also an organizational form of new digital economy. By studying the positioning and function of the platform under the background of digital economy, it is found that the development of the platform plays an active role in optimizing resource allocation and promoting technological innovation (8). On the other hand, when consumers use the platform, data will be generated. But generally speaking, the data generated by individuals are relatively small in quantity and dimension. However, if platform enterprises integrate these consumer data, the situation will be completely different. Platform enterprises can use statistical methods to analyze consumers' consumption patterns, and provide targeted services to platform consumers according to consumers' consumption preferences, so as to generate greater commercial value, and in some cases, there may be "data monopoly". For data with weak substitutability, platform enterprises can rely on this part of the data to increase their monopoly power in the product market, thus (9). Therefore, compared with the traditional economy, the differences in data privacy protection and platform consumers' service perception under the background of digital economy will make platform enterprises choose different pricing strategies. Platform economy will continue to further standardize and develop the platform economy by virtue of its economies of scale and scope generated by integrating data, help to form a more equal, inclusive, innovative and dynamic digital economy ecosystem, promote the healthy development of economy and society, and release the value of platform data elements.

2.3. Digital economy and digital finance

As a new financial model, digital finance has become a powerful supplement to the traditional financial system and provided important support for entrepreneurship. And promote entrepreneurship from the following aspects: First, digital finance can make up for the shortcomings of traditional finance, so that underdeveloped areas can also enjoy convenient financial services, thus promoting entrepreneurial activities in underdeveloped areas. Traditional financial institutions are often reluctant to serve remote and poor people, and there are only a few branches in underdeveloped areas, and these areas cannot enjoy convenient financial services such as lending and cash deposit and withdrawal (11). Digital finance makes it possible to realize the functions of payment, transfer, loan and so on as long as there is the Internet, which solves the problem that traditional micro-financial institutions have high customer acquisition and risk assessment costs to some extent.

The problem can help underdeveloped areas get rid of the long-standing shortage of financial services and promote entrepreneurship in these areas. Second, relying on big data, digital finance can assess the risk of small and micro enterprises at a lower cost, which reduces the financing cost of small and micro enterprises (16). Relying on digital finance can effectively help small and micro enterprises break through the threshold of entrepreneurship and promote entrepreneurship. Thirdly, digital finance has influenced the business model in many dimensions, which not only promotes the entrepreneurial behavior of enterprises, but also promotes the further development of digital economy.

3. Research methods

In order to explore the influence of consumer data value on the pricing strategy of platform enterprises, based on the review and summary of existing literature, this paper adopts three common models to discuss and analyze, namely linear city model, circular city model and vertical differentiation model. The following will start with these three models respectively, and then analyze the differentiated influence of platform enterprises on pricing strategy when consumer data is known and unknown.

3.1. Linear city model

The linear city model is an improved model proposed by Harold Hotelling for edge worth model in 1929, which is often used to study the influence of market structure on the efficiency of resource allocation. Based on the research background of this paper, firstly, we consider that there are two companies in the unit interval, namely A and B, in which Company A is located in position 0 and Company B is located in position 1, and the unit production costs of both companies are C. At this time, consumers are evenly distributed in the [0,1] interval, and the unit transportation costs. At this time, the utility function of consumers is:

$$\begin{cases} u_A = v_A - p_A - t\alpha \\ u_B = v_B - p_B - t(1 - \alpha) \end{cases}$$

The profit function of platform enterprises is:

$$\begin{cases} \pi_A = (p_A - c)\alpha \\ \pi_B = (p_B - c)(1 - \alpha) \end{cases}$$

See Table 1 for the specific parameters and meanings of the linear city model:

Table 1. Parameter symbols of linear urban model and their meanings

Parameter	Meaning
u_A, u_B	Utility of consumers receiving services in platform enterprises A or B
p_A, p_B	The price consumers need to pay for choosing services in different platform enterprise
v_A	Perceived Value of Consumers' Choice of Platform Enterprise A Service
v_B	Perceived value of consumers' choice of platform enterprise B service
α	The relative position of consumers in the unit linear market
t	Unit transportation cost
c	Unit production cost of platform enterprises

3.1.1. Consumer data information is unknown

If the consumer data information is unknown, platform enterprises will tend to choose the same pricing strategy at this time. For consumers the point of no difference is $\alpha = 1/2 + \frac{v_A - v_B + p_B - p_A}{2t}$. Based on the profit function of the platform enterprise, the pricing strategy can be obtained as

$$\begin{cases} p_A = t + c + \frac{v_A - v_B}{3} \\ p_B = t + c + \frac{v_A - v_B}{3} \end{cases}$$

Proposition 1: When the consumer data information is unknown to the platform enterprises in the market, the pricing strategy of the platform enterprises at this time is $p_A = p_B = t + c + \frac{v_A - v_B}{3}$, its actual maximum profit is $\pi_A = \frac{t}{2} + \frac{4t(v_A - v_B) + (v_A - v_B)^2}{6t}$ and $\pi_B = \frac{t}{2} - \frac{2t(v_A - v_B) + (v_A - v_B)^2}{6t}$.

The above conclusions show that: when consumer data information is unknown, platform enterprises will tend to unify pricing. At this time, the most relevant factor affecting the profits of platform enterprises is the difference in consumers' perception of services provided by different platform enterprises. If consumers have no difference in preferences for services or

products provided by platform enterprises A and B, then at this time $v_A = v_B$. Platform companies offer different services or products and get the same profit.

3.1.2. Consumer data information is known

If consumer data information is well known, platform enterprises will choose different pricing strategies for different types of consumers at this time. At this time, although platform enterprises can still personalize the pricing of consumer information, the competition among platform enterprises in the market will intensify, which will make the pricing of services or products decline to attract more consumers. At this time, the pricing strategies of platform enterprises are as follows

$$\begin{cases} p_A = c + t\alpha \\ p_B = c + t(1 - \alpha) \end{cases}$$

Proposition 2: When the consumer data information is known to the platform enterprises in the market, the pricing strategy of the platform enterprises at this time is $p_A = c + t\alpha$ and $p_B = c + t(1 - \alpha)$, the maximum profits they can achieve are $\pi_A = t\alpha^2$ and $\pi_B = t(1 - \alpha)^2$ respectively. The above conclusions show that when consumer data information is known, platform enterprises will choose personalized pricing strategy. At this time, the most relevant factor affecting the profits of platform enterprises is the relative position of consumers in the online market. Because of the transportation cost, consumers will tend to choose the services or products provided by the nearest platform enterprise. Therefore, for platform enterprises, the competitive part of consumers is essentially the part of consumers whose business location is greater than $1/2$, that is $\alpha > 1/2$. At this time, for the part of consumers with $\alpha = 1/2$, the preferences of services or products provided by different platform enterprises are the same, and the profits that platform enterprises can realize are $t/4$, the total profit of the enterprise is $t/2$.

Based on the conclusions of Proposition 1 and Proposition 2, when using the linear city model to analyze whether the value of consumer data affects the pricing strategy of platform enterprises, we can get that consumers can get services or products at lower prices when consumer data information is unknown and known, thus improving consumer welfare. Due to the intensified competition in the market, platform enterprises want to attract more consumers, that is, the one with a relative position greater than $1/2$ will reduce the pricing of products or services, thus reducing profits.

3.2. Circular city model

The circular city model further analyzes the value of consumer data from the perspective of consumers, assuming that there are n platform enterprises in the market equidistantly distributed in a circular city with a circumference of 1, and the i -th platform enterprise in a circular city is i/n , and provide the same type of services, n platform enterprises have the same unit production cost c , enter cost k , and consumers are evenly distributed in a circular city with a circumference of 1. Consider the platform enterprise i located in position 0 and platform enterprise j located in position $1/n$, where the relative position of consumers is $\alpha \in [0, 1/n]$, its utility function is:

$$\begin{cases} u_i = v_i - p_i - t\alpha \\ u_j = v_j - p_j - t(\frac{1}{n} - \alpha) \end{cases}$$

The profit function of platform enterprises is:

$$\pi_i = (p_i - c)D_i - K$$

Among them, $D_i = 2\alpha = \frac{1}{n} + \frac{v_i - v_j + p_j - p_i}{t}$, representing the services or products provided by consumers to platform enterprises in circular cities. See Table 2 for specific parameters and meanings of circular city model:

Table 2. Parameter symbols of circular city model and their meanings

Parameter	Meaning
u_i, u_j	The utility of consumers receiving services in platform enterprise i or j
p_i, p_j	The price consumers need to pay for choosing services in different platform enterprises
v_i, v_j	Perceived value of consumers' choice of platform enterprise i or j services or products
D_i	Demand for services or products of platform enterprises
α	The relative position of consumers in the unit linear market
t	Unit transportation cost
c	Unit production cost of platform enterprises
K	Entry cost of platform enterprises

3.2.1. Consumer data information is unknown

If the consumer data information is unknown, platform enterprises will also tend to choose the same pricing strategy at this time. For consumers, the indifference point is $\alpha = \frac{1}{2n} + \frac{v_i - v_j + p_j - p_i}{2t}$, and the profit function of platform-based enterprises can be obtained is:

$$\begin{cases} p_i = \frac{t}{n} + c + v_i - v_j \\ p_j = \frac{t}{n} + c + v_i - v_j \end{cases}$$

Proposition 3: When the consumer data information is unknown to the platform enterprises in the market, the pricing strategy of the platform enterprises at this time is $p_i = p_j = \frac{t}{n} + c + v_i - v_j$, and its maximum profit is $\pi_i = \pi_j = \frac{t}{n^2} + \frac{2(v_i - v_j)}{n} + \frac{(v_i - v_j)^2}{t} - K$.

The above conclusions show that: when consumer data information is unknown, platform enterprises will also tend to unify pricing. At this time, the relevant factors that affect the profits of platform enterprises are the differences in consumers' perception of services of different platform enterprises Δv and the entry costs of platform enterprises entering the market. If consumers have no difference in preferences for services or products provided by platform enterprises A and B at this time, that is, if $v_A = v_B$, platform enterprises provide different services or products to obtain the same profit, and all are $\frac{t}{n^2} - K$. The total profit of platform enterprises is $\frac{2t}{n^2} - 2K$.

3.2.2. Consumer data information is known

If the consumer data information is well known, the pricing strategy of platform enterprises will be similar to the linear city model, that is, they will choose different pricing strategies for different types of consumers. At this time, although platform enterprises can still personalize the pricing of consumer information, similarly, due to the intensified competition among platform enterprises in the market, the pricing of services or products will decline. At this time, the pricing strategy of platform enterprises is as follows:

$$\begin{cases} p_i = c + t\left(\frac{1}{n} - 2\alpha\right) \\ p_j = c + t\left(2\alpha - \frac{1}{n}\right) \end{cases}$$

Proposition 4: When the consumer data information is known to the platform enterprises in the market, the pricing strategy of the platform enterprises at this time is $p_i = c + t\left(\frac{1}{n} - 2\alpha\right)$ and

$p_j = c + t \left(2\alpha - \frac{1}{n} \right)$, when they enter the market, they get a zero profit¹. At this time, platform enterprises in the market to achieve effective competition.

The above conclusions show that when consumer data information is known, platform enterprises will also choose personalized pricing strategy to attract more consumers. At this time, the profits of platform enterprises are related to the relative position of consumers in the online market, the number of platform enterprises entering the market, the unit transportation cost and the entry cost of platform enterprises. Because of the transportation cost, consumers will tend to choose the services or products provided by the nearest platform enterprises, which will intensify the mutual competition among platform enterprises in the market and form a completely competitive market structure.

Based on the conclusions of Proposition 3 and Proposition 4, when the circular city model is used to analyze whether the value of consumer data affects the pricing strategy of platform enterprises, it can be concluded that consumers can obtain services or products at lower prices when consumer data information is unknown and known, thus improving consumer welfare. In addition, due to the intensified competition in the market, platform enterprises have gained zero profits when consumer data information is known. However, due to the intensified competition among enterprises aimed at individual consumers, the gross profit has decreased, resulting in fewer enterprises entering. Therefore, the result under the condition that the consumer data information is known is closer to the efficient result and leads to less unnecessary loss of equilibrium.

3.3. Vertical differentiation model

The vertical differentiation model analyzes the value of consumer data from the perspective of platform enterprises, assuming that there are two platform enterprises competing for price at the same time in the market, and the quality of products or services provided by platform enterprises is exogenous at this time. The product quality of platform enterprises is sum and the unit production cost is sum respectively. In addition, consumers have different willingness to pay for products or services of different platform enterprises, and the utility function of consumers is:

$$\begin{cases} u_L = \theta q_L - p_L \\ u_H = \theta q_H - p_H \end{cases}$$

The profit function of platform enterprises is:

$$\begin{cases} \pi_H = (p_H - c)(\bar{\theta} - \theta) \\ \pi_L = (p_L - c)(\theta - \underline{\theta}) \end{cases}$$

See Table 3 for specific parameters and meanings of vertical differentiation model:

Table 3. Symbols of vertical differentiation model parameters and their meanings

Parameter	Meaning
u_L, u_H	Utility of consumers receiving services in platform enterprises L or H.
p_L, p_H	The price consumers need to pay for choosing services in different platform enterprises.
θ	Consumers' preference for different types of services provided by platform enterprises, $\theta \in [\bar{\theta}, \underline{\theta}]$
c	Unit production cost of platform enterprises

¹ $\pi_i = \left(\frac{t}{n} - 2at \right) \left(4\alpha - \frac{1}{n} \right) - K < 0, \pi_j = \left(2at - \frac{t}{n} \right) \left(4\alpha - \frac{1}{n} \right) - K < 0$

3.3.1. Consumer data information is unknown

If the consumer data information is unknown, because consumers have different willingness to pay for different types of services or products provided by platform enterprises, consumers can maximize market efficiency to a greater extent at this time. However, because the consumer data information is known, platform enterprises will tend to choose the same pricing strategy. In other words, the indifference point is $\theta = \frac{p_H - p_L}{q_H - q_L}$, and the pricing strategy based on the profit function of platform enterprises can be obtained as follows

$$\begin{cases} p_H = c + \frac{(2\bar{\theta} - \theta)(q_H - q_L)}{3} \\ p_L = c + \frac{(\bar{\theta} - 2\theta)(q_H - q_L)}{3} \end{cases}$$

Proposition 5: When the consumer data information is unknown to the platform enterprises in the market, the pricing strategies of the platform enterprises at this time are $p_H = c + \frac{(2\bar{\theta} - \theta)(q_H - q_L)}{3}$ and $p_L = c + \frac{(\bar{\theta} - 2\theta)(q_H - q_L)}{3}$, its maximum profit is

$$\begin{cases} \pi_H = \frac{(2\bar{\theta} - \theta)^2 (q_H - q_L)}{9} \\ \pi_L = \frac{(\bar{\theta} - 2\theta)^2 (q_H - q_L)}{9} \end{cases}$$

The above conclusions show that when consumer data information is unknown, due to the different willingness of consumers to pay for different types of services or products provided by platform enterprises, platform enterprises providing high-quality products or services and platform enterprises providing low-quality products or services adopt different pricing strategies, respectively $p_H = c + \frac{(2\bar{\theta} - \theta)(q_H - q_L)}{3}$ and $p_L = c + \frac{(\bar{\theta} - 2\theta)(q_H - q_L)}{3}$. At this time, the relevant factors affecting the profits of platform enterprises are the difference in consumers' willingness to pay for services or products of different platform enterprises and the difference in the quality of products or services provided by platform enterprises.

3.3.2. Consumer data information is known

If consumer data information is well known, consumers in the market tend to buy high-quality products or services. At this time, platform enterprises will choose different pricing strategies for different types of consumers. However, because consumers are not the most effective choice at this time to buy low-quality products or services, the pricing strategies of platform enterprises are as follows:

$$\begin{cases} p_L = c \\ p_H = c + \theta(q_H - q_L) \end{cases}$$

Proposition 6: When the consumer data information is known to the platform enterprises in the market, the pricing strategy of the platform enterprises at this time is $p_L = c$ and $p_H = c + \theta(q_H - q_L)$, the profits from entering the market are $\pi_L = 0$ and $\pi_H = \theta(q_H - q_L)(\bar{\theta} - \theta)$, at this time, platform enterprises providing high-quality products or services have a monopoly position.

The above conclusions show that when consumer data information is known, platform enterprises will also choose personalized pricing strategies to maximize consumer surplus. At this time, platform enterprises that provide low-quality products or services get zero profits, while platform enterprises that provide high-quality products or services have a monopoly position, and their profits are related to consumers' willingness to pay for different quality products or services and the quality differences of products or services.

Based on the conclusions of Proposition 5 and Proposition 6, when using the vertical differentiation model to analyze whether the value of consumer data affects the pricing strategy

of platform enterprises, we can get that when consumer data information is unknown and known, because consumers are more inclined to buy high-quality products or services, platform enterprises that provide high-quality products or services have a monopoly position at this time, which will improve the distribution efficiency, but at this time, platform enterprises that provide low-quality products or services will choose lower pricing strategies and get zero profits, resulting in the reduction of profits of the entire industry.

4. Conclusions and policy implications

In this paper, we focus on and discuss the value of consumer data in the context of digital economy. In order to explore whether consumer data information affects the pricing strategy of platform enterprises, we categorically discuss the relationship between consumer data value and platform enterprises' pricing strategy under the two situations of known and unknown consumer data information. Three common models are selected for analysis, namely linear city model, circular city model and vertical differentiation model. First, based on the linear city model, when the consumer data information is known to the platform enterprises in the market, the platform enterprises adopt personalized pricing strategies for consumers. When the consumer data information is unknown to the platform enterprises in the market, the platform enterprises tend to adopt a unified pricing strategy, which can be obtained at this time. When the consumer data information is known, the platform enterprises will choose a lower pricing strategy in order to attract more consumers, thus improving the welfare of consumers, but reducing their own profits. Secondly the analysis is based on the circular city model. When the consumer data information is unknown to the platform enterprises in the market, the platform enterprises are also inclined to adopt a unified pricing strategy and obtain the same profit. When the consumer data information is known to the platform enterprises in the market, the pricing strategy of the platform enterprises is different, and the long-term profit obtained by the platform enterprises in the market is zero, and the platform enterprises in the market have realized effective competition. At this time, similar to the analysis of the linear city model, the basic conclusion is still valid, that is, when the consumer data information is known, the platform enterprises in the market have achieved effective competition. Consumers can achieve access to services or products at lower prices, thereby improving consumer welfare. However, due to more intense market competition at this time, platform enterprises gain zero profits when consumer data information is known, which makes fewer enterprises enter the market. Finally, the analysis is based on the vertical differentiation model. When the consumer data information is unknown, the platform enterprises that provide high-quality products or services and those that provide low-quality products or services adopt different pricing strategies due to the different willingness of consumers to pay for different types of services or products provided by platform enterprises. At this time, the relevant factors affecting the profits of platform enterprises are the difference of consumers' willingness to pay for services or products of different platform enterprises and the difference of the quality of products or services provided by platform enterprises. When the consumer data information is known to the platform enterprises in the market, the pricing of the platform enterprises providing high-quality products or services is higher, but compared with the platform enterprises providing low-quality products or services, their long-term profits from entering the market are greater than 0, and the platform enterprises providing high-quality products or services have a monopoly position. At this time, different from the analysis of the above two models, in the vertical differentiation model, consumers choose to buy high-quality products or services is a more effective choice, which can improve the distribution efficiency and make the platform enterprises providing high-quality products or services have a monopoly position, but at the same time, the platform enterprises providing low-quality products or services will choose a lower pricing strategy. Thus obtaining zero profit, resulting in the reduction of profits of the

entire industry. To sum up, consumer data information can affect the pricing strategy of platform enterprises, and further affect the profits obtained by platform enterprises. Generally speaking, compared with the situation where consumer data information is unknown, the market transaction efficiency is higher when consumer data information is known, and consumers can effectively improve their welfare. However, when the products or services provided by platform enterprises have obvious quality differences, the market can improve the welfare of consumers effectively. Platform enterprises that provide high-quality products or services can form a monopoly position, which affects the total welfare of society.

Based on the above research, the enlightenment of this paper is as follows:

1. Before collecting and analyzing consumers' private information, we can increase the introduction of third-party authentication platforms, such as signing informed consent forms; Or co-name with well-known brands in the industry, so as to improve consumers' perceived trust level and alleviate the negative evaluation of privacy information sensitivity on service quality. The advantage of introducing the third-party authentication platform is that the third-party authentication platform provides perfect privacy protection measures, and can also provide different levels of privacy protection services according to the requirements of e-commerce platforms. In this way, consumers can know the measures taken by the e-commerce platform to protect consumers' privacy, and consumers can also know which personal information will be protected by the e-commerce platform and the third-party authentication platform when signing the informed consent form. Consumers should also read the contents carefully when signing the informed consent form. Co-branding with well-known brands in the industry mainly relies on the reputation of well-known brands to eliminate the influence of privacy information disclosure. Well-known brands generally have high privacy protection measures, and through cooperation with them, they can also use their privacy protection measures to protect the privacy information of consumers on e-commerce platforms.

2. Advertisements that enhance consumers' orientation can be added to the advertisements of e-commerce platform products, emphasizing the benefits and positive effects of purchasing products or services, or emphasizing the convenience provided after collecting consumer data, thus reducing the sensitivity of information privacy. When designing the corresponding advertisements, the e-commerce platform can indirectly remind users of the personal information they need when purchasing the corresponding services, and emphasize that the personal information will be protected and will not be leaked to third-party platforms. According to the conclusion of this study, because perceived trust plays a significant regulatory role, we can establish as many brand emotional connections as possible before collecting data to promote trust; Because the adjustment orientation also has a significant adjustment effect, it can highlight the promotional demands such as income and benefits in the advertising appeals, and alleviate the negative effects brought by the privacy information sensitivity of e-commerce platforms. In addition, it further emphasizes the convenience and intelligent services that consumers can obtain, so that consumers can feel the benefits of obtaining services, thus reducing the sensitivity of privacy.

3. Clarify and improve the trading rules of consumer data collection and circulation. When platform enterprises need to collect consumer data, they must first clearly inform consumers and obtain their consent; Secondly, the ways of using data must be made clear. For consumer data collected in compliance, platform enterprises have the right to develop and process it, but its use purpose must be specific and legal, and platform enterprises have no right to use the collected and developed consumer data to achieve other purposes; Finally, we must clarify and improve the accountability mechanism of consumer data management, and platform enterprises should integrate and develop consumption. Users make different pricing strategies to get more profits, but they also have the obligation and responsibility to protect the privacy and safety of consumers' personal data. For the flow of consumer data, it is necessary to know

whether the data receiver has the ability to protect data privacy and whether the way to use it is legal, and at the same time, it is necessary to obtain the consent of the data subject.

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