

# ***Influence of E-commerce Economy on Consumer Decision Making***

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**Abstract:** In recent years, with the vigorous rise of the electronic economy, e-commerce platforms have sprung up like mushrooms, and their types are increasingly rich and diverse, covering B2B (business to business), B2C (business to consumer), C2C (consumer to consumer) and o2o (online to offline). The coexistence and competition of these models have greatly promoted the rapid development of e-commerce. However, it is worth noting that the laws and regulations in the field of e-commerce are not perfect, which to a certain extent has triggered a game between merchants and buyers in Internet consumption behavior, and the two sides often have disputes due to the vague definition of rights and interests. In addition, the rise of e-commerce has also had a far-reaching impact on the logistics and transportation industry, and promoted the transformation and upgrading of the industry. From the perspective of game theory, this paper attempts to deeply analyze the behavioral logic of buyers and sellers in e-commerce, tap the key factors affecting their decision-making, and build a model to judge the mixed strategy of buyers and sellers. At the same time, combined with the characteristics of e-commerce, the article also discusses its specific impact on the development of logistics industry in detail.

**Keywords:** e-commerce economy, game theory, consumer behavior.

## **1. Introduction**

Due to the rapid rise of e-commerce, the survival and development of the traditional retail industry have been greatly affected. E-commerce is developing rapidly in China. By 2023, its transaction volume had reached 45.5 trillion yuan, up 8.5 percent yearly. The traditional retail industry and e-commerce are both fiercely competitive and are also developing a trend of mutual integration and cooperation. E-commerce is a new business model for commodity trading and various business activities on the Internet. This model includes the use of email advertising, the publication of online advertisements, the creation of corporate websites, search engine optimization, the establishment of trading platforms, basic operations, drainage and promotion, new media content marketing, commodity supply chain, and its industrial chain, etc [1].

The influence of e-commerce on the traditional retail industry is mainly manifested in three aspects: channel, cost, and experience. The convenience and low-cost advantages of online channels have reduced the number of customers and sales of offline stores. Online stores have a direct impact on brick-and-mortar stores by their scale and price advantages. In addition, e-commerce platforms offer personalized, interactive shopping experiences compared with traditional retail. Traditional retail, on

the other hand, is one-dimensional and ineffective. Faced with the huge impact of e-commerce, the traditional retail industry urgently needs to find a way to transform. To sum up, e-commerce and traditional retail both compete and promote each other [2].

However, the types of e-commerce platforms and their operating models are diverse. Specifically, these types and models include B2B, B2C, C2C, and O2O, each of which has its own specific market demand and operation strategy.

The birth of Alipay in 1999 marked the beginning of the vigorous development of China's e-commerce market. In 2003, with the official launch of Taobao.com, China's C2C e-commerce entered the public's vision, opening free transactions between individual sellers and individual sellers. The following year, Jingdong Mall was established, establishing the first direct business-to-consumer sales, that is, the B2C model. In 2007, the establishment of Tmall.com pushed China into the B2C era. With the advent of the mobile Internet era, O2O enterprises represented by Meituan and Didi have risen rapidly, further connecting online and offline. In 2014, Alibaba went public in the US. With the continuous development of science and technology and society, the e-commerce industry has come into everyone's life.

To sum up, e-commerce tends to diversification, individuation, intelligence, and globalization. The application of big data and artificial intelligence technology enables e-commerce platforms to more accurately understand consumer needs, provide personalized recommendations, and optimize user experience. At the same time, with the improvement of the global logistics network and the development of cross-border payment technology, the globalization trend of e-commerce is becoming more and more obvious. More and more enterprises are expanding into the international market through e-commerce platforms. While technology has boosted the e-commerce economy, it has also created new determinants of consumer decision-making. For example, evaluation sharing by other consumers, online live streaming, and delivery. Based on this, this paper aims to explore how the e-commerce economy affects consumer decision making and explore the dominant strategies of consumer decision making.

## **2. Theoretical Analysis of Consumer Decision-making Process**

### **2.1. Traditional Consumer Decision Model**

#### **2.1.1. Rational Decision Model**

Under the framework of the rational decision model, consumers' purchase choice behavior is based on a core assumption that they pursue utility maximization when making decisions. In this process, consumers will consider several key factors, including but not limited to their actual demand, the price level of the product, the quality of the product, and its performance. The consumer will then conduct a detailed analysis and evaluation of all available options. This process relies entirely on logical reasoning to select the product or service that will give the consumer the most satisfaction. In short, consumers in the rational decision-making model use rigorous logical analysis to ensure that the purchase decision is made to maximize its utility.

#### **2.1.2. Bounded Rational Decision Model**

From the perspective of the bounded rational decision model, consumers do not have complete information mastery ability and absolute rational judgment ability. On the contrary, they are more inclined to adopt a series of simplified strategies when making decisions, rather than just relying on the single factor of product quality. These strategies include relying on rules of thumb and using mental shortcuts, which can provide quick evidence but may lack precision. Nevertheless, the use of these methods significantly reduces the cognitive burden on consumers when faced with complex

decisions. Therefore, under the condition of bounded rationality, consumers respond to the challenges of incomplete information and bounded rationality by adopting these strategies, which are fast but may not be completely accurate.

## **2.2. The Impact of E-commerce on Consumer Decision-making**

In the context of e-commerce, consumers often do not have direct physical access to goods. Therefore, they need to make consumption decisions through indirect information sources and experience that cannot be completely rational, which is different from the common limited rational decision factors. E-commerce has its unique influences, such as the evaluation of other consumers, the delivery of livestream anchors, and the analysis of big data. These may lead consumers to make decisions in favor of bounded rational decisions. At the same time, due to the lack of visibility of electronic money, it is easy to weaken consumers' consumption concept, which may lead to further impulse consumption. Because the time cost of commodity comparison is reduced, retrieval and evaluation are more convenient, and consumers can make more rational decisions.

To be specific, consumer purchasing behavior in the context of e-commerce presents the following three characteristics. First, the development of e-commerce platforms diversifies consumer demand. Big data facilitates consumers to choose more suitable products, thus dividing the consumer market. Secondly, compared with traditional shopping, consumers pay more attention to price performance, merchant reputation, and buyer evaluation when shopping online because they can't directly touch the products. The purchasing behavior becomes more rational with the accumulation of experience. At the same time, the comparative cost is lower, and it is more convenient to choose products based on multiple factors. Finally, due to the combination of social media and e-commerce platforms, social factors have an increasingly prominent impact on consumers' purchase decisions, and they often refer to other people's comments and opinions before purchasing [3].

In general, the influence of the e-commerce economy on consumer decision-making behavior is manifested as the coexistence of impulsive consumption and deliberate consideration. On the one hand, the convenience of an e-commerce platform improves the purchasing efficiency of consumers, but on the other hand, consumers' purchasing behaviors do not fully follow the rational principle and are often induced by promotional activities and other factors to make impulse purchases. However, when buying high-value goods, consumers tend to think carefully and make decisions through sufficient research and comparison. At the same time, when discussing the impact of the e-commerce economy, we also need to fully consider the multiple impacts that the same factor may bring. For example, recommendation systems have played a positive role in enhancing the shopping experience, but in some cases may also lead to homogenization of consumer choices. Specifically, when the recommendation system relies excessively on consumers' historical behavior data, it may continue to recommend similar or similar goods, thus making the recommendation content tend to be single, and thus limiting the range of consumers' choices to some extent. Given this phenomenon, we need to conduct specific analyses based on specific problems to comprehensively evaluate the complex impact of the e-commerce economy on consumer decision-making behavior [4].

## **3. The Impact of the E-commerce Economy on Consumers' Information Acquisition**

The reduction of information asymmetry and the improvement of transparency. Commodity information asymmetry means that buyers and sellers have different degrees of information about commodities, which is generally found in commodity transactions [5]. Information asymmetry is mainly reflected in the following three aspects.

First, the identity information of the two sides of the transaction is secret. On the e-commerce platform, transactions mostly rely on search engines to obtain commodity information, and the source

and authenticity are doubtful. The buyer can only identify the goods offered by the seller based on limited information, and the dependence on the reputation of the merchant is much higher than that of offline merchants. However, sellers can register multiple accounts, their identities are complex, the cost of default is low, and the punishment for violations is not serious. At the same time, it is difficult to verify the personal information of the buyer when purchasing, which causes the information asymmetry of the e-commerce market to increase, and the risk to rise. Compared with the traditional market, the seller information of the e-commerce market is difficult to obtain and verify, the commodity attributes are difficult to identify, the delivery time is slow, the network payment is risky, the after-sales service is difficult to guarantee, and the overall risk is high.

Secondly, logistics and capital payment cause poor information. During the transaction, the buyer pays the third party, the seller delivers the goods, and the seller receives the money only after the buyer confirms the receipt of the goods. In this process, the buyer is likely to return the goods, which will increase the logistics cost. There are also businesses with poor integrity after receiving empty packages, accountability is difficult, making the problem of information asymmetry worse.

Third, the material and product publicity information does not match. Traditional buyers can intuitively judge the value of goods, but e-commerce transactions can only rely on the seller's graphic introduction, difficult to accurately judge. Once the seller is shoddy and the goods are wrong, high transaction risks will arise, damaging the rights and interests of consumers and disrupting the order of the e-commerce market [6]. To avoid information asymmetry, platform, and government supervision can be adopted to manage reputation and provide a more comprehensive and true evaluation system.

### **3.1. Role of Social Media, User Evaluation and Word-of-mouth Marketing**

Based on the influence of information asymmetry on consumers' decision-making, the evaluation of commodities by other consumers and society plays an important role in e-commerce transactions [7].

In terms of positive evaluation, true evaluation is of great significance to consumers and can become an important basis for them to buy goods. By these evaluations, consumers can gain insight into the real quality of the goods and the actual effectiveness of use, to be more prudent and wise in the purchase decision-making process, and effectively avoid the risk of purchasing products that do not meet their needs or are of poor quality.

From the perspective of businesses, the real evaluation reflects the needs of consumers, accurately reflects the advantages and disadvantages of their services and goods and is a key guide to promote the advancement of service quality and commodity quality. In the face of all kinds of consumer evaluation, if the business can respond positively, whether it is a positive evaluation or negative evaluation, it will help to enhance customer satisfaction and loyalty to the brand and lay a solid foundation for long-term and stable development.

In the aspect of negative evaluation, some merchants, eager to improve sales and store reputation, deliberately create false positive evaluation information by paying for it, which seriously disrupts the normal operation order of the market and greatly damages consumers' right to know and independent choice according to law. At the same time, like the act of brushing, merchants provide certain benefits to consumers who send favorable comments when selling goods, thereby improving the favorable comment rate, which violates the established rules of the e-commerce platform and forms a strong impact and destruction of the existing credit evaluation system. Based on the above chaos, it is difficult to effectively screen the authenticity of shopping evaluation content. Under the pressure of merchants or the temptation of interests, the evaluations submitted by some consumers are often unable to accurately and truthfully reflect the actual conditions of the products, which makes it difficult for other consumers to accurately judge their authenticity when referring to the evaluations.

There are many loopholes in the current evaluation system, and some consumers will deliberately give negative evaluations for the good reviews of merchants; And some businesses will threaten the consumers who give negative comments, which will affect the authenticity of the evaluation. Therefore, consumers' evaluation rights are infringed from time to time.

Fundamentally, there are significant defects in the laws and regulations concerning online shopping evaluation. Online shopping evaluation is a powerful tool for consumers to supervise the quality of goods and services, and the completeness of relevant laws and regulations is directly related to the prosperity and stability of the e-commerce market and the practical protection of consumer rights and interests.

### 3.2. Personalized Algorithm Recommendation

Assuming that the general income of e-commerce is  $V_0$ , the additional income that can be obtained after beautification evaluation is  $V_1$ . The cost of an untrue assessment is  $x$ . Under the real evaluation, the consumer income is  $B$ . Consumers find that the e-commerce evaluation is not true, will refuse to buy, report, the corresponding loss of e-commerce is  $L$ , and the loss of consumers is  $C_0$ . The cost of consumer verification is  $C_1$ .  $r$  is the probability that consumers find untrue comments. According to the return regulations of China's e-commerce, each return will generate freight for e-commerce and consumers respectively. Assuming that the freight cost of e-commerce is  $C_2$  and the freight cost of consumers is  $C_3$ . Assuming that e-commerce bears the cost of shipping freight, the game model between e-commerce and consumers is shown in Table 1.

Table 1: shows the game model between e-commerce and consumers

Strategies	Buying	Not Buying
Real reviews	$(V_0 + V_1 - C_2, B - C_1)$	$(V_0 - C_2, -C_1)$
Beautify evaluation	$(V_0 + V_1 - C_2 - rL - x, -C_1 - rC_0 - rC_3)$	$(V_0 - X - C_2, -C_1)$

Let the combination of e-commerce choosing real reviews as  $a$

$$E_b = a(B - C_1) + (1 - a)(-C_1 - rC_0 - rC_3) \quad (1)$$

$$E_{nb} = a(-C_1) + (1 - a)(-C_1) = -C_1 \quad (2)$$

To get the Nash equilibrium,

$$E_b = E_{nb} \quad (3)$$

$$aB - r(1 - a)(C_0 + C_3) = 0 \quad (4)$$

To get the Nash equilibrium point,

$$a = r(C_0 + C_3) / [r(C_0 + C_3) + B] \quad (5)$$

It can be concluded that under the same conditions, the higher the probability of consumers finding untrue evaluation, the more inclined merchants are to choose true evaluation; The higher the consumer income, the more likely the merchant is to choose the beautification evaluation.

Let the combination of consumers choosing to buy as  $b$

$$E_r = b(V_0 + V_1 - C_2) + (1 - b)(V_0 - C_2) \quad (6)$$

$$E_{nr} = b(V_0 + V_1 - C_2 - rL - x) + (1 - b)(V_0 - x - C_2) \quad (7)$$

To get the Nash equilibrium,

$$E_r = E_{nr} \quad (8)$$

$$b(rL + x) + (1 - b)x = 0 \quad (9)$$

To get the Nash equilibrium point

$$b = -x/rL \quad (10)$$

#### 4. The Impact of Consumer Behavior on Other Industries

The interaction between e-commerce platforms and consumers also affects other industries, such as logistics and transportation, as well as various sectors in the manufacturing process. The following uses the logistics industry as an example to explore the impact of consumer behavior on other industries.

With the normalization of online shopping, consumers are increasingly pursuing fast and accurate delivery, and the high requirements of "same-day delivery" and "next-day delivery" on the delivery time have promoted the logistics and transportation industry to accelerate the upgrading of its operation mode. Logistics enterprises have increased their investment in storage facilities, transportation tools, and intelligent distribution systems to meet consumers' increasingly eager expectations for receiving goods. For example, to achieve fast delivery, some large logistics companies have established dense storage centers in major cities across the country. Goods are stored in local warehouses in advance, and once an order is generated, they can be quickly sorted and shipped, greatly shortening the delivery time.

The diversification of consumers' purchase frequency and purchase period makes the business volume curve of the logistics transportation industry tend to be flat, but the total volume continues to rise. In the past, under the traditional shopping mode, logistics peak season and off-season are distinct, but now, e-commerce promotion activities are frequent, and consumers may place an order at any time. Logistics companies must optimize staffing and vehicle schedules to cope with this constant and fragmented transport pressure. For example, during major shopping festivals such as Double 11 and 618, logistics companies prepare months in advance, recruit temporary workers, and increase transport vehicles to ensure smooth delivery of massive orders.

At the same time, the promotion methods of the shopping festival are mainly in the form of discounts, gifts, and coupons, which stimulate people's impulse consumption behavior. When the forward logistics have been difficult to operate efficiently due to the large quantity, e-commerce users are easy to choose to return goods due to the excessive fluctuation of commodity prices during the shopping festival, the full amount of subsidies, and the impatience to wait for logistics transportation. The dilemma of forward and reverse logistics will bring profit losses to e-commerce enterprises. According to relevant data, the return rate of daily online shopping is about 10%, and the return rate during the "Double Eleven" can be as high as more than 30% [8]. In addition to ensuring accurate and safe delivery of forward logistics, logistics companies need to handle larger logistics scales at the same time.

#### 5. Conclusion

This paper has launched a multi-dimensional in-depth exploration of e-commerce, clearly showing its complex ecology and far-reaching influence in today's economic pattern.



The rapid development track of e-commerce, and e-commerce platform types are rich and diverse, B2B, B2C, C2C, O2O, and other diversified operating models diversified development, which not only changes the business operation model but also reshapes the consumer decision-making system.

At the level of consumer decision-making, e-commerce has caused the integration of traditional rationality and limited rationality decision-making models. In the e-commerce environment, consumer decision-making is influenced by unique factors, such as evaluation, live broadcast, etc., showing the coexistence of impulse and rationality. Low-value goods are easy to buy impulsively, while high-value goods are thoughtful; Recommendation systems have both advantages and disadvantages, enhancing the experience and potentially limiting choice.

In terms of information access, although the e-commerce economy has reduced some information asymmetry by facilitating price comparison and providing multiple information sources, new problems such as the secret identities of both parties to the transaction, the complicated payment process of logistics funds, and the inconsistency between the physical object and the publicity have intensified the transaction risks. Social media evaluation is crucial, but it is plagued by false praise and malicious bad reviews, highlighting the urgency of improving laws and regulations. Through the game model, we can see that the probability of consumer supervision affects the evaluation strategy of merchants, and the two checks and balances each other.

Consumer behavior also affects logistics and other industries. Consumers are demanding delivery timeliness, prompting logistics to upgrade warehousing, transportation, and distribution systems; The distribution of purchase time changes the business volume curve, and enterprises need to optimize the manpower and vehicle scheduling; Impulse consumption in shopping festivals leads to high return rates. Logistics enterprises are under pressure to deal with reverse logistics while ensuring forward distribution.

In short, e-commerce is a double-edged sword, creating opportunities, improving efficiency, and enriching consumption experience, but also spawning many problems. In the future, all parties need to make concerted efforts to improve regulations, optimize platform governance, and upgrade industry services to achieve sustainable prosperity in the e-commerce sector, so that it can better promote social development.

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