

## A research on E-commerce Trust Mechanism Based on Block Chain

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**Abstract:** More than 20 years ago, the concept of electronic commerce appeared on the Internet of our country. In recent years, e-commerce industry with its fast and convenient advantages, the development trend is unstoppable. At present, online shopping occupies an increasing proportion in daily life. At the same time, the issue of trust has been closely related to the long-term development of the e-commerce industry. With the advent of blockchain 3.0 era, the current trust problems in e-commerce industry, such as fake reviews, widespread fake and shoddy products, can be well solved through the application scenario of blockchain + e-commerce. This paper first discusses the feasible trust mechanism of e-commerce from the perspective of blockchain.

### 1. Introduction

In the late 1990s, with the rise of computer technology in China, e-commerce industry has stepped into the battlefield of China. Along with the rise of such e-commerce platforms as Taobao, jingdong, our country e-commerce has got considerable development in the recent decade. For more than a decade, the business model of e-commerce has been constantly changing, and the power of e-commerce platforms has expanded rapidly. On the one hand, this form brings extreme convenience to people; on the other hand, the centralized platform dominates everything in the e-commerce world, so the contradiction between platform and participants gradually emerges. The conflict reflects the oligopoly pattern of e-commerce ecosystem.

### 2. The trust problem in the operation of E-commerce

#### 2.1. Serious brushing causes buyers to lose trust in sellers

Through the investigation of the current situation of e-commerce, it is not difficult to find that each platform is not underestimated brush single situation. Most of the real evaluation of the shop is less, most of the shop will buy a special brush praise account for their own shop praise. In addition, nowadays, there are so many fake comments that we can also draw the conclusion that the supervision of fake platforms is not in place. Because e-commerce buyers cannot make purchases by seeing the real thing, but make choices based on the pictures provided by sellers and other buyers' post-consumption evaluation, there is a problem in this mechanism, that is, false praise will bring bias to consumers' judgment. When the actual product received is different from the information shown in the picture, consumers will have doubts about the trust of the seller. Similarly, there will always be bad reviewers, and some sellers will let bad reviewers give bad reviews to their competitors, leading to a crisis of confidence in their competitors' stores. This distrust will also have a negative impact on the development of the e-commerce industry.

#### 2.2. Uneven quality levels of cross-border e-commerce products cause buyers to lose trust in sellers and platforms

The issue of selling fake goods on e-commerce platforms and quality control have been the focus of supervision by relevant departments. Among the problems reported by consumers today, it is

difficult to trace product information and it is impossible to determine the authenticity of goods. In this context, cross-border e-commerce sales and quality problems appear particularly serious.

On the one hand, due to the particularity of cross-border e-commerce industry and the lack of sound regulatory bodies, it is more difficult to control the quality of goods. Due to the longer supply chain of cross-border e-commerce, there will be a long period of time and process between the delivery of goods and the buyer's receipt of goods, and the goods will go through many links. In this environment, the fake goods will be exchanged for the real ones. In this environment, cross-border e-commerce products are prone to problems. Especially now the criminals faking form is impossible to prevent, a little careless will appear fake delivery, selling fake goods and other situations. On the other hand, at present, the traceability ability of cross-border e-commerce is still weak, and buyers cannot get real-time updates of commodity information. In addition, in the current widely used traceability system, it is not completely free from manual control, and it is not difficult to tamper with information. In addition, this system is often in the hands of centralized authorities, and even if problems are found, the responsibility cannot be traced to specific groups or individuals. Therefore, the quality of cross-border e-commerce products cannot be reliably guaranteed, which will lead to buyers' distrust of sellers and cross-border e-commerce platforms.

### **3. Blockchain technology solution of trust system**

It can be said that blockchain network technology will play an important role in each process of the construction of e-commerce trust system. First, for the establishment of the honest comment system, Bitcoin day destruction and deep learning combined with token can be used to reduce the content of fake comments and encourage consumers to make real comments on commodities. The distributed ledger framework ensures decentralized technology endorsement, making transaction data authentic and traceable[1].

#### **3.1. Establish a benign evaluation system**

As for the behaviors of malicious writing bad reviews and hiring mercenaries to write good reviews on e-commerce platforms, we can conduct reasonable supervision and treatment through blockchain technology. Richard Dennis has improved the evaluation system by adding blockchain technology to this problem. Schaub extends this idea further, building a system that ensures the high security of buyer information, thus ensuring the authenticity of the evaluation.

In the face of difficult to identify the situation such as the review of positive comments, in order to increase the content of effective comments as much as possible and establish a reliable credit environment, on the one hand, we can properly use artificial intelligence to eliminate part of the fake comments, on the other hand, we can use blockchain technology to introduce the destruction and token of Bitcoin day to ensure the effectiveness and authenticity of comments.

The platform is faced with a large number of commodity evaluations every day. First of all, it can conduct deep learning on the real evaluations that have been connected to the chain and establish identification models. Then, based on the real-time update of the comment identification model, the mass comments are judged every day, and the fake comments are automatically screened. Of course, even with the use of artificial intelligence for real-time learning, constantly optimize the model, there are still accounts will cheat. For example, more and more good and bad reviewers now offer professional customization to sellers, where each review is carefully written, rather than pasted and copied. Therefore, it is particularly important to introduce the concept of coin day destruction and token.

Bitcoin day destruction is one of the important concepts of blockchain, and it can be said that it is a perfect combination with the trust evaluation system. A simple example can be used to explain the destruction of coins. If A pays B the 5 amounts (coins) he has held for 100 days, then the coin days of C in this transaction will be 500 coins. Then, if A pays B the 5 amounts (coins) he has held for 200 days, then the coin days of D in this transaction will be 1000 coin days. In the evaluation system without the introduction of coin day destruction, the evaluation of each transaction has the same weight in the system. If the concept of the destruction of coins is introduced into the

evaluation system, the phenomenon of negative reviews will be solved. The operation process of the reviewer is generally like this: buy and sell the goods with the seller's money, click to confirm the receipt of the goods in the case of not receiving the goods, return the payment to the seller, the seller pays the brushing fee to the reviewer. On the surface, there seems nothing wrong with this operation, but closer examination reveals that the essence of the transaction is that the seller is buying his own goods with his own money. After the introduction of bitinday destruction, every transaction will be added to the comparison of bitinday destruction. The larger the amount of bitinday destruction, the greater the impact of this evaluation on the seller. If the reviewer attempts to continue a fake review with the seller through repeated transfers and fake shipments, the system will recognize and reduce the weight of the review. Similarly, in the case that bad reviewers brush a large number of negative comments by buying small items, the system will calculate a low destruction of coins, and the weight of comments will be reduced accordingly.

### **3.2. Establish commodity quality traceability and anti-counterfeiting system**

In the traditional accounting method, it is very difficult to realize the traceability without time difference, because each node is independent of each other, the accounting method of other points cannot be obtained, and the node records false accounts from time to time. In view of the problems of difficult to control the quality of cross-border e-commerce products and rampant counterfeiting, the introduction of blockchain e-commerce can solve these problems and realize the effect of traceability and anti-counterfeiting of goods[2]. In blockchain, information can be shared among various entities such as buyers, sellers, regulatory authorities and others.

In blockchain e-commerce, the platform can first take advantage of its resource advantages at the top of the supply chain, and use radio frequency identification (RFID) and other Internet of things technologies to obtain all the information of commodities from the raw material stage to the formation of commodities in real time, and write all the data generated by the commodities into the blockchain, transforming the centralized bookkeeping into distributed bookkeeping. Next, the e-commerce platform can take the initiative to occupy and coordinate the positions of buyers, sellers and logistics partners to open up the business chain. Buyers at the end of the business chain can log in to their e-commerce platform accounts and check the authenticity of the goods purchased and various data information through the blockchain[3]. Of course, external regulators and laws are also necessary.

E-commerce platform is responsible for connecting sellers and buyers. Its background stores all transaction data on the platform and has a strong computing power to ensure the operation of the blockchain system. In addition, it occupies an absolutely advantageous position in the supply chain of the system. In this system, in order to ensure the traceability of goods, each commodity will have a traceable two-dimensional code, which contains all the information of the commodity, including production date, circulation route and a series of data. These data are updated in real time, and merchants can update the information on the chain in real time with the movement of the goods. Buyers can also scan the code to obtain all the information on the blockchain about the commodity upstream and downstream, which is of great help to ensure the quality of the commodity. At the same time, in terms of anti-tampering and anti-counterfeiting, these data are protected by asymmetric encryption technology and digital signature. For example, if a worker mistakenly fills in the wrong production date when entering the product information, then the production date can be changed to the correct date only with the consent of all other nodes if he wants to correct this error. And, the modification record is permanently preserved with the item and time-stamped. In this way, once a problem occurs, the buyer can immediately trace the source to the specific link and its responsible subject.

## **4. Conclusion**

At present, the development of electronic commerce has ranked among the top in the world, forming integrated electronic commerce industry. On the one hand, the rapid development of e-commerce is a comprehensive manifestation of the remarkable improvement of science and

technology, on the other hand, it also brings a series of development difficulties and bottlenecks. Trust issues loom large in these dilemmas. The emergence of blockchain technology has solved the problem of trust in the operation of e-commerce industry. The model of blockchain 3.0+ e-commerce will certainly help major e-commerce platforms build a trust system across the link and solve the trust problem: the introduction of token and Bintian destruction to solve false comments, and the product information chain from the source of anti-counterfeiting.

Blockchain technology was invented only a few decades ago, and there are still many problems. If it is further applied in the field of e-commerce, the following issues need to be further considered: ① How to ensure that the source information is correct. Although blockchain network has made great progress in anti-counterfeiting traceability compared with other technologies, it is still difficult to guarantee the authenticity of commodity source information. For example, if a cow just born in Anhui is shipped to Xinjiang by the manufacturer, the identity of the cow is "produced in Xinjiang" when the manufacturer links the information. ② In fact, the implementation of the token is still difficult at this stage. How to realize and design an online token that conforms to the national standard and is really beneficial to users still needs further research and exploration.

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