Research on Security Countermeasures of Enterprise Electronic Commerce Based on Big Data

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Abstract. With the improvement of network technology and the development of electronic field, big data is more and more used in various fields. Among them, the field of e-commerce is a specific manifestation of big data's application in the business field. At present, the rise of various shopping websites makes people's production and life more and more inseparable from e-commerce. However, the security of enterprise e-commerce has been criticized by people as a major defect. This study discusses the development of enterprise e-commerce, the influence of big data on the business industry, and the enterprise e-commerce security countermeasures based on big data, which provides ideas for solving this kind of problems.

Keywords: E-Business, Security Protocol, Big Data

1. The development of enterprise electronic commerce

1.1. The definition of enterprise electronic commerce
The extensive and effective application of e-commerce requires the joint efforts of the whole society in order to give full play to the role of e-commerce.

By definition, e-commerce refers to electronic transactions and related service activities on the Internet, intranet and value-added networks. it is the electronization and networking of all aspects of traditional business activities. These tools, whether rudimentary or advanced, are covered, such as telephone, telegram, Internet and so on. E-commerce is a commercial form that transmits commodity transaction information through the Internet and other media to facilitate transactions [1].

1.2. Advantages and disadvantages of electronic commerce
E-commerce has both advantages and disadvantages. It makes the direct transaction between producers and consumers possible. Compared with the traditional transaction mode, e-commerce can break through the regional and time restrictions and enable people in different regions to transmit information freely [2].

However, the network itself has its limitations. E-commerce also has some non-standard details. For example, the prices of goods on the Internet are uneven at present. There is a big problem with invoices for online shopping.
With the continuous development of e-commerce, people's daily life is increasingly inseparable from it. The major of e-commerce is rising day by day, and there is a great demand for professionals. Although the current disadvantages of e-commerce can not be ignored, in the immature growth period, but e-commerce has a lot of room for development.

1.3. Evaluation of the index system of e-commerce

From the perspective of assets: 1). General company financial indicators; 2). Unique indicators such as guest unit price.

From the point of view of the product: 1). Supply chain capacity, specific indicators include inventory turnover cycle, storage capacity, etc.; 2). Category combination strategy, such as striving for comprehensiveness and subdivision advantages.

From the manager's point of view: 1). The skill structure of the leadership team; 2). Corporate culture style. It is not easy for established large companies to do a good job in starting a second business, while emerging companies often have internal problems after the initial stage of development.

From the perspective of information: 1). The information openness of the platform; 2). Information expansibility; 3). Information security.

This study mainly discusses the information security of e-commerce and its security countermeasures.

![Diagram](image)

**Figure 1.** Evaluation of the index system of e-commerce.

2. Big data's influence on business industry

Data has been applied in many fields, and the fields involved by big data have made progress and development to varying degrees. This is a gratifying thing. It is for this reason that many industries are scrambling to use big data technology, and e-commerce is no exception.

With the blessing of big data's technology, e-commerce has been transformed into electronic intelligent commerce. The principle of e-commerce intelligence is that big data changed the e-commerce model to make e-commerce more intelligent. If the software has big data, then the software will be more intelligent. Although the society is still on the eve of the big data era, people's daily life can not be separated from it. Dating sites make new matches based on the relationship between an individual's personality and a previously successful couple. Self-correcting smartphones analyze our previous input and add personalized new words to the phone dictionary. In the near future, many areas of the world that now rely solely on human judgment will be changed or even replaced by computer systems. There are more directions in which computer systems can play a role [3].

As we all know, there is a great difference between human brain thinking and machine thinking. But machine thinking is victorious in speed, and intelligent software has been able to replace the operation of human brain thinking in many fields. All the information people need can be revealed, and everyone's Internet behavior can be recorded. These recorded big data can produce deep
information after cloud computing. After big data software mining, the business information needed by the enterprise can be provided in real time, which provides big data support for enterprise decision-making, marketing, customized products and so on. People today are surrounded by data. Everything people do online and offline generates data. The problem with raw data is that it is so large that it is difficult for enterprises to use it to make informed decisions. This information provides useful insights that retailers and e-commerce enterprises can take advantage of [4].

1. Shopping behavior.
E-commerce companies can check which products are the most popular according to the behavior data of customers' online purchases.

2. Customer service.
Providing good customer service is the key to e-commerce enterprises. E-commerce enterprises need to make it as easy as possible for customers to contact them to solve or raise problems.

3. Supply chain management.
Use big data to manage the supply chain more effectively. Data analysis can reveal any delays or potential inventory problems in the supply chain.

4. Prediction and analysis.
Data from e-commerce companies can illustrate new trends in the market. Use this kind of information to design the next stage of inventory and make new market aims. It is by no means easy to develop with the real-time development trend of electronic economy, but using big data can significantly increase the probability of enterprise profit, help managers to build the enterprise into a forward-looking enterprise with development prospects. If an enterprise does not start the work of excavating big data, then the enterprise may be abandoned by the era of development and become an outcast.

3. Security countermeasures of enterprise electronic commerce based on big data

3.1. Security problems of enterprise electronic commerce in big data era
At present, one of the most important factors affecting the development of e-commerce is the security of network and enterprise system. Some researchers have conducted a survey in the field of the development prospects of e-commerce enterprises. When the researchers asked the respondents some questions, such as why consumers do not want to shop on the online platform, but prefer to spend offline, many of the respondents' answers are related to network security questions. Most people believe that e-commerce platforms have certain risks that make consumers' computers and personal accounts vulnerable to hackers. What is more serious is that these loopholes can lead to the loss of money. Secure and reliable communication network is a problem that major netizens attach importance to and believe in e-commerce.

The security requirements of merchants and customers mainly include the following aspects:

1). The confidentiality of information. Credit card account and users, customer information is a very important information for e-commerce, so it is necessary to ensure the security of information.

2). The identity of the trader.

3). The non-repudiation of the transaction. In an online transaction, once the two parties to the transaction reach an agreement. Then the agreement comes into force and cannot be easily abandoned. Agreements that do not have strict credit effectiveness will undoubtedly harm the interests of both parties to the transaction.

4). The integrity of the content of the transaction. The same is true of transaction documents. Once the transaction is successful, the document cannot be easily modified. Transaction documents without strict validity will inevitably damage the rights and interests of both sides of the transaction, and destroy the fairness and seriousness of the transaction.

5). Access control. Any user recognized by the system can only access the information that the website has authorization and the manager specifies to browse in the system, and illegal users will refuse to access the system resources.
E-commerce transactions implemented on the computer Internet must have the characteristics of confidentiality, integrity, identifiability, unforgeability and non-repudiation. The dual requirements of e-commerce for computer network security and business security make the security of e-commerce more complex than most computer networks. Therefore, e-commerce security should be implemented as a security project, not as a solution.

3.2. Security countermeasures that can be taken

1). The relevant departments of the state shall organize professional security technology research teams to concentrate their efforts on the development and research of some network security technologies. This can establish a secure network operating environment for users.

2). Enterprises should strengthen the security management of their websites: Do a good job of security configuration. Install patches in time. Install antivirus software and firewall. Encrypted transmission of important data.

3). Establish a social credit system.

The credit problem of e-commerce is how e-commerce websites follow the credit principle in their economic behavior. Enterprises can dynamically evaluate the credit rating of each user participating in e-commerce by establishing various forms of e-commerce credit certification center and national online credit rating database. Digital grade certificates can also be issued to users to enhance the reliability of e-commerce transactions [5].

4). Establish a system of commercial laws and regulations.

China's e-commerce legal system should not only be in line with China's actual situation, but also in line with the international situation. The new laws and regulations on e-commerce must clearly define the legal responsibility of illegal and criminal acts of e-commerce, so that the punishment measures to regulate the behavior of e-commerce can be followed by law [6].

4. Conclusion

With the development of big data, the arrival of the era of e-commerce is the trend of the times. China's e-commerce started relatively late, the current development is not perfect, but the market development potential of e-commerce is endless. With the popularity of the network economy among the population and the improvement of the openness of the telecommunications and network markets, the security of e-commerce should not be underestimated. This study puts forward some countermeasures for the security problems of e-commerce from four aspects: technical research, security management, credit system and laws and regulations. Although there are still some defects in e-commerce, after continuous improvement, e-commerce will certainly become an indispensable role in people's life in the future.

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