

Research on Consumer Information Security Prevention in Express Industry Based on Big Data Analysis

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Abstract: Online Shopping Makes People's Life More Convenient and Affects People's Lifestyle to a Certain Extent. However, the Commodity Nature of Personal Information in the Online Shopping Environment Also Makes the Personal Information of Online Shopping Consumers More and More Important to Merchants. in the Network Environment of the Big Data Era, We Should Continuously Improve and Construct a More Perfect and Sound Information Supervision System to Ensure Information Security. Based on the Analysis of the Main Internal Causes of Customer Information Disclosure in Express Delivery Industry, This Paper Discusses the Main Factors of Customer Information Disclosure in Express Delivery Industry from the Perspectives of Merchants, Express Delivery Enterprises and Laws and Regulations. and from the Perspective of Consumer Information Security Prevention in Express Delivery Industry Based on Big Data Analysis, It Will Analyze the Strategies of Personal Information Protection in Express Delivery Service Industry.

1. Introduction

At the Present Stage, the Number of Online Shopping Users in Our Country Has Increased on a Large Scale, and More and More Consumers Have Realized the Convenience of Online Shopping. However, At the Same Time, It is Not Uncommon for Express Packages to Be Replaced Due to the Leakage of Information in Express Orders. More Serious is the Frequent Occurrence of Criminal Cases Such as Burglary and Robbery [1]. Online Shopping Has Great Advantages over the Traditional Shopping Mode. It is Not Limited by Time and Place, and the Range of Goods Selection is Also Wider. Consumers Can Easily and Quickly Buy the Goods They Need by Turning on the Computer, Tapping the Keyboard and Moving the Mouse to Select the Goods They Like. Behind the Strong Market Demand, There Have Always Been Serious Omissions in the Express Delivery Industry, Such as Goods Management Inspection, Sender Information Confirmation and Industry Supervision [2]. after Practical Investigation, the Express Delivery Accident Was Curbed from the Source. the Express Delivery Industry Aims to Reduce Costs and Pursue Benefits. At the Same Time, Due to the Lag of Laws and Regulations to Protect Consumers' Personal Information, Its Enthusiasm to Protect Consumers' Personal Privacy is Not High [3]. with the Vigorous Development of e-Commerce and Express Delivery Market, Burglary Cases Caused by the Disclosure of Express Number Information Have Been Reported Frequently Recently. Express Delivery Loss or "Package Change" Often Occur, and the Problem of Information Security Has Aroused People's Attention Again. Big Data Processing Technology is for the Processing of Information Collection Big Data Arises At the Historic Moment. under the Conditions of Sea Quantification, Large-Scale and Rapid Growth and Diversified Information Resources, Big Data Processing Technology Provides Important Technical Conditions for Consumer Information Security Prevention in Express Delivery Industry.

2. Overview of Big Data

New Processing Mode Events Brought by Big Data Have Stronger Decision-Making, Insight and Discovery Capabilities and Process Optimization Capabilities to Adapt to Massive, High Growth Rate and Diversified Information Assets. the Analysis Results of Big Data Are Influenced to Some Extent by Analysis Methods, and Different Analysis Methods Are Suitable for Different Data Types.

Based on Data Sources, Big Data Can Be Divided into the Following Categories: Big Data from People: This Mainly Includes Various Data Generated and Output by People in the Process of Using the Internet and Various Network Activities, and Data Types Include Text, Pictures and Videos, Etc. Specialized Analysis and Processing of These Meaningful Data Are Carried out through Specific Information Processing Technologies and Processing Modes, Including Large-Scale Parallel Processing Databases, Data Mining, Distributed File Systems, Distributed Databases, Cloud Computing Platforms, the Internet and Scalable Storage Systems, Which is Also Commonly Referred to as Big Data Processing Technologies [5]. It is Precisely Because Big Data Contains a Large Amount of Original Information That Individual Differences Can Be Discarded through in-Depth Analysis and Mining, So That People Can More Accurately Grasp the Laws Hidden Behind Things through Appearances. from the Perspective of Big Data System Architecture, the Nine-Tier Architecture is Mainly Used in Data Analysis, But Its Specific Application Needs Further Study.

3. Main Causes of Customer Information Disclosure in Express Delivery Industry

3.1 There Are Loopholes in the Supervision of Express Delivery Companies, and Individual Employees Seek Personal Benefits

In recent years, the phenomenon of divulging personal information of consumers in express delivery industry is very serious. The state and relevant departments have never stopped severely condemning and cracking down on this kind of behavior that infringes the personal privacy of consumers, but the effect of cracking down is not obvious. An express package has four express orders, one for the sender, one for the recipient, one for the express company and one for the express personnel. In this case, if there is any mistake in any link, it may cause the leakage of the user's personal information. The biggest possibility is that the courier will deliver the express to the customer. Consumers' awareness of protecting personal privacy has been awakened. Only when the express delivery industry adapts to consumers' needs as soon as possible can it obtain consumers' approval. The information management method lags behind, the information security management system is not perfect, the education and training of employees are neglected, and the strict system restriction and supervision are lacking. The express delivery industry is almost a blank sheet of paper in the protection of personal information, which is the main reason for the existence of personal information security risks in the industry. For example, many companies have their own receiving and dispatching centers. After the courier hands over to the receiving and dispatching centers, a large number of express consignments are piled up, giving the people who steal the information of express order numbers the opportunity to take advantage of. In addition, after customers sign for express delivery, the express delivery form is discarded casually, which may also cause information disclosure. Therefore, Chinese current laws and regulations to protect the personal information security of online shopping consumers are fragmented and need further improvement.

3.2 The Relevant Laws and Regulations Are Not Perfect and the Supervision Department is Weak

Compared with the Internet, telecommunications and other fields, the express delivery industry leaks are the latecomers. However, with the explosive growth of the online shopping market, the express delivery industry is more and more closely connected with thousands of households, and the public safety risks brought about by the illegal disclosure of personal information are also constantly enlarging [6]. We can see that although there are not too few laws and regulations related to personal information security protection, the levels of these laws and regulations are generally low, such as interim measures, management regulations, etc. are not authoritative and are scattered in various legal provisions. Once a consumer's personal information is disclosed, it may be used by illegal elements. In addition to its commercial value, some illegal elements may also use illegal means to harass, extort, blackmail, rob and kidnap the consumer whose personal information is disclosed. There are a large number of employees, but the employment threshold is low, the overall

level of education of employees is not high, the legal awareness is weak, the flow is obvious, the personnel management system is chaotic, many express delivery personnel do not have labor contracts but work in their posts, lacking necessary vocational training and corresponding professional ethics. According to Chinese postal law and relevant regulations, the supervision department of express delivery industry includes postal service, industry and commerce, etc. The post office is responsible for the supervision of the express delivery market, and the industry and commerce department is responsible for investigating and punishing illegal express delivery operations such as unlicensed, unlicensed and out-of-scope operations [7]. Many of them are lower-level and less authoritative departmental rules and regulations, local regulations, administrative regulations, etc., which are difficult to provide strong support for the judgment of related cases.

3.3 E-Commerce Sellers Privately Trade Express Numbers Because of the Reputation of Their Shops

When shopping online, many consumers no longer only pay attention to the “good quality and low price” of goods, because there will be many shops selling the same or similar goods online at the same time, and there will be more than one shop selling goods of the same price. Shopkeepers have a difficult start. To attract consumers online shopping, they need to have a strong “popularity” and demand, so they have to buy and sell. On the websites such as “Tao Dan 114” and “Tao Dan ba”, how to “brush and drill” is also introduced. If Taobao shopkeepers want to “create” the illusion of selling products like hot cakes. By purchasing the real express order number, the virtual transaction is carried out without discount, so as to improve the quantity of merchandise transactions and the rate of merchandise evaluation, thus achieving the purpose of quick “drilling brush” in a short time, further improving the reputation level of online stores and increasing the transaction probability of online stores. An express delivery needs to go through multiple links of receiving, sending and dispatching. Each link can be contacted with personal information, and this process spans different regions. A series of problems, such as difficulty in discovery, investigation, obtaining evidence, adducing evidence and punishing, have reduced the cost of illegal activities and led to more rampant information leakage. In addition to using different IP addresses to purchase and sell, there is also an important link in logistics. In order to avoid Taobao's inspection system, the owner must first provide the real delivery order number and the delivery time, and the delivery address cannot be changed frequently. The information contained in the express order includes the express order number, the express company, the name and contact information of the consignee, the receiving address, etc., which means that the parcel can be forged only by purchasing the real information of the express order.

4. Consumer Information Security Precautions in Express Industry Based on Big Data Analysis

4.1 Data Anonymous Protection Technology

Structured data contained in big data can also be called relational data, and data anonymity technology can be used as a basic means and technology for privacy protection [8]. Constantly optimize the internal management mechanism, improve the management efficiency, establish a set of safe consumer personal information security mechanism, to prevent the disclosure of consumer personal information. From the long-term development of enterprises and brand building and other angles, guide enterprises to consciously maintain and supervise the whole process of information processing, encourage employees to do a good job of information maintenance by combining rewards and punishments, and resolutely report employees who discover leaked information to relevant departments without concealing or shielding them. At present, in the application process of big data, the handling of anonymous protection is still very complicated, because various types of illegal users can obtain data from a variety of different channels, and the data sources are diverse [9].

An important indicator of user experience for Internet services, especially mobile Internet services, is usability. This combination of verification of user behavior data and user experience

testing is often used in the optimization of user experience of Internet services. Its complete operation flow is shown in Figure 1.

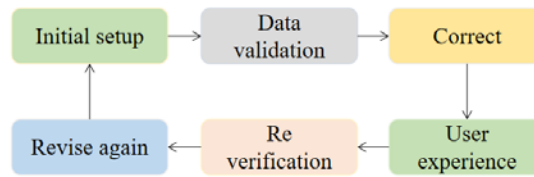


Fig.1 Complete Job Flow

The storage service provided by cloud storage to users is based on the Internet, so the details of various complex underlying technologies such as storage capacity and data availability do not need users to consider [10]. The protection of strong personal privacy information, due to the increasing use of personal information on the network, some sensitive information is easily leaked. And big data technology can collect and integrate target information through various channels, analyze the corresponding data, and then make some use of it. Therefore, in order to better protect the information security in big data, we can start with the research and development of big data technology, the training of relevant talents and the improvement of the system of big data information security, and finally achieve the goal of protecting the data security in big data.

4.2 Data Watermarking Technology

Data watermarking technology is to embed all kinds of information identifying the user's identity into the data carrier in a very hidden way, and at the same time, it will not have a serious impact on the data. This technology can be applied to the copyright protection of multimedia data, of course, it can also be applied to the protection of text files. Express delivery enterprises strengthen and optimize internal management, strengthen the management of the use, recovery, destruction and other work links of the express delivery details list, and carry out service upgrading guided by customer service and customer protection to provide high-quality and brand-name services. Express delivery companies need supervision, and online shopping merchants also need to strengthen supervision. In addition, it is necessary to raise the entry threshold for express franchisees, raise the employment standards for express employees, conduct regular audits and inspections of franchisees, conduct professional ethics education and training for company employees, and conduct regular reviews and assessments, so as to enhance the safety awareness of online shopping consumers' personal information.

In the process of providing storage services, storage users and cloud computing users are the main two kinds of cloud storage users, which are divided according to the different contents of user services. The key of cloud storage service is mainly the data center constructed by cloud computing theory, as shown in Figure 2.

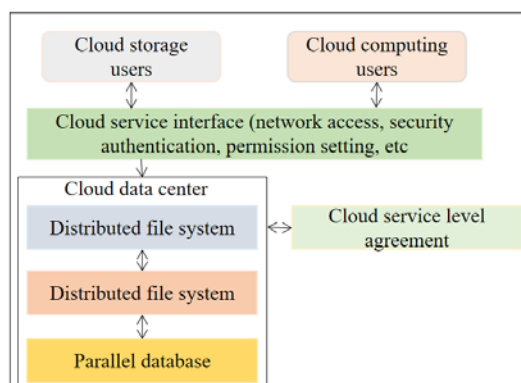


Fig.2 Big Data Cloud Storage Model Diagram

There are many methods to generate digital watermark, including watermark based on fine adjustment of document structure, watermark with slight difference between character spacing and

line spacing, watermark based on text content and watermark based on natural language. Storage users and cloud computing users are the main two types of cloud storage users, which are divided according to different user service contents. It is suggested to integrate big data processing resources, coordinate big data processing and analysis mechanisms, promote data sharing among key databases, accelerate the modeling process of advanced sustainable attacks, and eliminate and control the hazards of advanced sustainable attacks.

4.3 Traceability Technology of Data

In the early stage of data processing, it is necessary to integrate the data. At the same time, considering the diversity of data, it is necessary to record the data source, transmission and calculation process. Only in this way can we provide assistance and support for the later mining and decision-making process. It is very important to protect personal information. Consumers of online shopping must enhance their awareness of personal information security and be vigilant at all times, so as to prevent the leakage of personal information of consumers and deny criminals opportunities. In other words, they also protect their personal and property safety. In this regard, it can be said that Chinese current security defense measures are still at a low level, thus unable to adapt to advanced sustained attacks. Then in order to better develop the protection of big data technology, the definition of non-malicious and malicious actions needs to be determined first. In the field of database research, the technology of data traceability has emerged. The basic starting point of this technology is to determine the sources of various data stored in the data warehouse. For example, the basic table content structure that constitutes a data item, etc. Before the package is discarded, the personal information on the package must be erased, and the express information label on the package of online shopping items should be blacked out until the information cannot be recognized, and then the package should be processed. In this way, the details of various complex underlying technologies such as storage capacity and data availability do not need to be considered by users, and they can obtain infinite storage space and enterprise-level quality of service from cloud storage providers only for a fee.

5. Conclusion

With the rapid development of the Internet and the gradual maturity of online shopping, more and more merchants have realized the importance of information. Personal information already has some attributes of commodities, so personal information disclosure incidents emerge one after another. With the continuous acceleration of software development in the field of cloud computing, society is paying more and more attention to big data analysis, thus gradually forming analysis services. The safety protection of the database is a complicated and long task. We must improve the database according to various requirements of the enterprise in operation and management to ensure the safety of enterprises and users. With the healthy development of the express delivery industry, consumers' personal information security issues must be given high attention. Relevant departments should continuously improve and perfect the laws and regulations of the express delivery industry, enterprises should strengthen supervision, and consumers should enhance their awareness of personal information self-protection in order to protect the personal information security of consumers, thus enabling the express delivery industry in China to develop better and faster.

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