

Retraction

Retracted: Construction of Mobile E-Commerce Platform and Analysis of Its Impact on E-Commerce Logistics Customer Satisfaction

Complexity

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] Z. Dong, "Construction of Mobile E-Commerce Platform and Analysis of Its Impact on E-Commerce Logistics Customer Satisfaction," *Complexity*, vol. 2021, Article ID 6636415, 13 pages, 2021.

Research Article

Construction of Mobile E-Commerce Platform and Analysis of Its Impact on E-Commerce Logistics Customer Satisfaction

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With the development of mobile network communication technology, online shopping has further become the mainstream way of mass consumption. To this end, this article attempts to start from the innovation of e-commerce platform, uses today's Internet of Things, collects relevant information, and collects relevant data through smart sensors, to establish a mobile e-commerce platform and analyze and explore the impact of e-commerce logistics customer satisfaction of factors revolve around e-commerce logistics. This article uses smart sensor technology to mine and analyze e-commerce information data and then design and build a new mobile e-commerce platform. Taking the two major e-commerce platforms of Jingdong and Taobao as examples, through online evaluation surveys, the importance of factors affecting logistics service quality and customer satisfaction under different logistics distribution models was explored and analyzed. Under JD's selfoperated logistics distribution model, users pay the most attention to the integrity of the delivered goods, the accuracy of the delivery time, and the service attitude of the delivery personnel. The importance is ranked second, first, and third, reaching 48.36%, 50.36%, and 61.64%, respectively. Under the third-party logistics distribution model of Taobao, the main influencing factors are the integrity of the delivered goods, the accuracy of the delivery time, the importance of outer packaging, and the importance of product integrity, reaching 37.52%, 41.1%, and 24.29%, respectively.

1. Introduction

1.1. Background and Significance. In recent years, the development of Internet technology, especially wireless networks and 5G mobile communication technology, has made people shopping online more convenient and efficient. The network economy has ushered in the heyday of development and has become an important part of the national economy. However, with the vigorous development of e-commerce, many problems have emerged day by day. Among them, logistics distribution is one of the important factors affecting the development of e-commerce, and it is a key link that affects customer satisfaction. How to improve the timeliness of e-commerce logistics distribution to improve customer satisfaction is a problem that all e-commerce companies must face and urgently solve.

With the continuous upgrading and optimization of mobile terminal equipment such as smartphones, traditional

e-commerce platforms are no longer satisfied with the needs of the contemporary market, so mobile e-commerce has emerged. Mobile e-commerce integrates more advanced mobile network communication technologies on the basis of traditional e-commerce. Its real-time transaction behavior is more efficient, convenient, and safe. It is not only compatible with traditional e-commerce models but also increases support for mobile device users. In order to solve the current logistics and distribution problems in the e-commerce industry and improve customers' satisfaction with e-commerce logistics, this article proposes to build a mobile e-commerce platform, using the mobile e-commerce platform's powerful front and back management technology and system structure to achieve timely updates of logistics information, and the rapid delivery of goods can improve customer satisfaction with e-commerce logistics, enhance customer loyalty to e-commerce companies, and promote the development of e-commerce companies.

1.2. Related Work. With the development and popularization of the Internet, mobile terminal devices such as smartphones have become more and more advanced and complete. Based on the background of this era, e-commerce has developed rapidly and quickly occupied a powerful share of the market economy. The theoretical framework they put forward will help companies and individuals to better understand the factors that affect consumer satisfaction [1]. In addition, Zhang and Zhang said that China's e-commerce is developing rapidly, and logistics play an important role in its development. How to evaluate logistics satisfaction has become an important topic. They selected representative e-commerce companies as samples and established logistics satisfaction evaluation indicators based on the research results of domestic and foreign logistics service quality evaluation indicators. At the same time, they used the analytic hierarchy process and entropy method to calculate the combined weight of each indicator. Combined with the TOPSIS method, a logistics satisfaction evaluation model is designed. Through empirical analysis, they verified the effectiveness of the model and tried to propose some specific measures to improve logistics satisfaction [2]. Based on this, many experts and scholars have put forward their own views on the development status and existing problems of e-commerce companies in my country. They believe that only by improving customer satisfaction can the long-term development of e-commerce be promoted, but how to improve customer satisfaction is a problem. Few people propose to link the mobile e-commerce platform with logistics distribution. Based on this, this article attempts to build a mobile e-commerce platform and strengthen the platform's logistics management of goods, so as to improve the timeliness of logistics and distribution and thereby improve customer's satisfaction with e-commerce logistics.

1.3. Innovations in This Article. The innovations of this article are mainly reflected in the following aspects: (1) online shopping is the trend and trend of today's era. E-commerce has gradually developed into an important part of China's market economy, solving the logistics problems of e-commerce enterprises and improving customer satisfaction. In order to promote the development of e-commerce enterprises is the heart of the people and the direction of love. The research content of this article is of great social practical significance. (2) With the rapid development of Internet technology, smartphones and other terminal devices are constantly updated and upgraded. As a kind of network economy, e-commerce companies rely on mobile terminals. Therefore, in order to achieve rapid development, e-commerce companies must deeply learn and apply the concepts of mobile e-commerce, realize innovation by building platforms, and continuously promote their own development.

1.4. Article Content Frame. This article mainly introduces the theoretical knowledge related to a mobile e-commerce platform and e-commerce logistics customer satisfaction, including the service content, characteristics, and

advantages of mobile e-commerce, as well as the factors that affect e-commerce logistics customer satisfaction and introduces the effect of e-commerce on customer satisfaction influences. This article mainly uses smart sensor technology to mine and analyze e-commerce information data and then design and build a new mobile e-commerce platform. Taking Jingdong and Taobao as examples, the importance and satisfaction of factors affecting the quality of logistics services under different logistics distribution modes are explored through investigation and analysis of website user evaluation.

2. Impact of Mobile E-Commerce Platforms on E-Commerce Logistics Management and Customer Satisfaction in the Internet of Things Era

2.1. IOT System

2.1.1. Internet of Things. The Internet of Things is another new type of science and technology after the Internet. Through the use of various physical devices, the interconnection between "things and things" can be realized. The connection process is completely completed by the computer network and the object separately, without a manual. The participation and operation of all data are uploaded by the device, and the processing of the data is also automatically processed by the cloud platform of the Internet of Things, and the final instructions are also executed by the device. The development of the Internet of Things technology connects the Earth into a whole, truly realizes the global intelligence, and puts human beings in an intelligent environment [3].

2.1.2. The Network Structure of the Internet of Things. The network structure of the Internet of Things is mainly composed of three parts: information perception layer, network layer, and application layer. The information perception layer contains a large number of smart sensors to collect and perceive information; the network layer is composed of two parts: a gateway and a network. The gateway is responsible for receiving information from the perception layer, simply processing the information, and converting it into data information. After that, it is passed to the network for upload; the application layer is the bridge connecting the network and the user, and the processed data information is directly fed back to the user after being transmitted from the network to the application layer [4].

2.1.3. Cloud Computing. Cloud computing is the core technology of the Internet of Things system with powerful data computing functions. It is a distributed computing with massive storage functions and strong perception capabilities. The calculation principle is to divide huge data calculation tasks into small calculation programs and allocate them to the resource pool of the network cloud and process and analyze data through the connection of multiple servers.

2.1.4. Key Technologies of the Internet of Things. Sensor technology is one of the key technologies of the Internet of Things. As the source of information acquisition, it has a pivotal position in various application systems. The working principle of the smart sensor is as follows: after the sensor node collects the signal, the obtained original signal is transmitted to the sensor network for signal analysis and data mining, and finally, the most effective data signal is obtained, and the number of data transmission is minimized to reduce power consumption [5]. For data mining, Apriori algorithm and K -means algorithm based on association rules are more common.

- (1) The Apriori algorithm process is as follows:

First, set frequent item set 1 as L_1 , count the number of occurrences of each item in the item set, and record as candidate item set 1 A_1 , given the lowest support C_1 of candidate item set 1.

Second, calculate the candidate item set 2 A_2 according to $C_1 * C_1$ and calculate the number of occurrences of each element in C_2 according to the minimum support A_2 of the given candidate item set 2.

Third, keep repeating the above steps until C_K is generated.

Fourth, connect and prune data. First, scan the database data to get the first item set L_1 , get A_2 from $L_1 * L_1$, continue to scan the database, get L_2 , and then get A_3 from $L_2 * L_2$. When the loop reaches the k th time, A_k is obtained from $L_{k-1} * L_{k-1}$. If $A_k \neq \emptyset$, then continue to scan the database to get L_k , otherwise the algorithm ends. Secondly, A_k is obtained in the K scan, and L_{k-1} is obtained from the $(k-1)$ th scan as the item connection set, and then, the item set is obtained through the connection transaction. Since its subset is not a frequent item set, its $(k-1)$ itemsets are not frequent itemsets, so they need to be trimmed or deleted.

Fifth, after completing the above operations, the final calculation result yields all frequent itemsets as follows:

$$\begin{aligned} L_1 &= \{\text{large1 - itemsets}\}, \\ \text{for } (k &= 2; L_{k-1} \neq \emptyset; k + 1), \\ C_k &= \text{Apriori - gen}(L_{k-1}). \end{aligned} \quad (1)$$

- (2) According to the above steps, the Apriori algorithm tends to converge slowly for the processing and analysis of big data. Based on this, we propose an improved Apriori algorithm as follows:

First, set up the relationship matrix. Set vector

$$H_j = \begin{pmatrix} T_{1j} \\ \dots \\ T_{nj} \end{pmatrix}, \text{ where } T_i \text{ is the } i \text{ transaction, we get}$$

$$T_{ij} = \begin{cases} 0, & I_j \in T_i, \\ 1, & I_j \notin T_i, \end{cases} \text{ sup - count}(I_j) = \sum_{i=1}^n T_{ij}. \quad (2)$$

Second, let the matrix of item set 1 be

$$H = (H_1, H_2, \dots, H_n) = \begin{bmatrix} d_{11} & \dots & d_{1n} \\ \dots & \dots & \dots \\ d_{m1} & \dots & d_{mn} \end{bmatrix}. \quad (3)$$

Third, set the vector of item set 2 to H_{ij} , and let

$$H_{ij} = H_i \wedge H_j = \begin{bmatrix} d_{i1} \wedge d_{j1} \\ \dots \\ d_{ni} \wedge d_{nj} \end{bmatrix}. \quad (4)$$

Fourth, set up the binary relationship matrix as follows:

$$H = \begin{bmatrix} d_{11} & d_{12} & \dots & d_{1n} \\ d_{21} & d_{22} & \dots & d_{2n} \\ \dots & \dots & \dots & \dots \\ d_{m1} & d_{m2} & \dots & d_{mn} \end{bmatrix}. \quad (5)$$

Among them, the value d_{kj} of the j item contained in the first transaction is k , and the value k of the r_{kj} item not included in the j transaction is 0.

- (3) K -means algorithm

Step 1. There is a data set D with n data item. Assuming that the data set is clustered into k clusters, then the smallest distance between clusters $a(j, q)$ is defined as

$$a(j, q) = \min \frac{\sum_{i=1}^{n_p} \|x_i^p - x_j^q\|^2}{n_k}, \quad 1 \leq p \leq k, p \neq q. \quad (6)$$

Among them, p and q represent cluster items, i and j represent data items, x_i^p represents the i data in the p cluster of the data set, x_j^q represents the j data in the k cluster in the data set, and n_k represents the data item. The total number of data items in k clusters.

Step 2. Set the distance $u(j, q)$ within the cluster to be the average distance from the i data item in the 14th category to all other data samples in the cluster.

$$u(j, q) = \frac{\sum_{i=1, i \neq j}^{n_j} \|x_i^q - x_j^q\|^2}{n_q - 1}, \quad (7)$$

Among them, x_i^q represents the i data item of the q type and $i \neq j$, n_j represent the number of items in the j cluster.

Step 3. Let the clustering distance $\text{baw}(j, i)$ of the i data sample of the j type be the sum of the minimum intercluster distance and the intracluster distance of the sample, then

$$\text{baw}(j, i) = \min \frac{\sum_{i=1}^{n_p} \|x_i^p - x_j^q\|^2}{n_k} + \frac{\sum_{i=1, i \neq j}^{n_j} \|x_i^q - x_j^q\|^2}{n_q - 1}, \quad 1 \leq p \leq k, p \neq q. \quad (8)$$

Step 4. Let the clustering distance difference $bsw(j, i)$ of the i data sample of the j type be the difference between

the minimum interclass distance and the intraclass distance of the sample, then

$$bsw(j, i) = \min \frac{\sum_{i=1}^{n_p} \|x_i^p - x_j^q\|^2}{n_k} + \frac{\sum_{i=1, i \neq j}^{n_j} \|x_i^q - x_j^q\|^2}{n_q - 1}, \quad 1 \leq p \leq k, p \neq q. \quad (9)$$

Step 5. Set BWP as the ratio of the cluster distance difference and the cluster distance sum of the data sample, then

$$BWP(j, i) = \frac{bsw(j, i)}{baw(j, i)} = \frac{\min\left(\sum_{i=1}^{n_p} \|x_i^p - x_j^q\|^2 / n_k\right) - \left(\sum_{i=1, i \neq j}^{n_j} \|x_i^q - x_j^q\|^2 / n_q - 1\right)}{\min\left(\sum_{i=1}^{n_p} \|x_i^p - x_j^q\|^2 / n_k\right) + \left(\sum_{i=1, i \neq j}^{n_j} \|x_i^q - x_j^q\|^2 / n_q - 1\right)}, \quad 1 \leq p \leq k, p \neq q. \quad (10)$$

2.2. Mobile E-Commerce

2.2.1. Service Content of Mobile E-Commerce. First is shopping. Online shopping is the basic service content provided by mobile e-commerce. Since the birth of e-commerce, this type of online shopping has slowly emerged. The emergence of mobile e-commerce has pushed online shopping to a new level of development. With the help of mobile e-commerce, users can enjoy more convenient and free online shopping through their mobile communication devices, greatly improving the limitations of traditional shopping.

Second is book tickets, rooms, and meals. Nowadays, with the popularization of the Internet, businesses in all fields of society have been seamlessly connected to the Internet. Through the Internet, we can book air tickets, bus tickets, or admission tickets online, and we can also book hotel rooms and various catering services. Business users can use the Internet to check the availability of reservation information, check and confirm the reservation service, or pay online in advance for ticket, room, and meal fees, and change or cancel reservations on the way [6].

Third is entertainment. All kinds of video software, music software, and game software are all mobile e-commerce. Users can experience various entertainment methods on their mobile communication devices. At the same time, users can also make online recharges for paid videos, music, and games.

Fourth is transactions. At present, the combination of the stock financial market and mobile e-commerce is becoming closer. The immediacy of mobile e-commerce makes stock trading activities timelier and more convenient. Therefore, many users will choose to use mobile communication devices to browse financial news and information, as well as online management and stock management transaction.

Fifth is banking business. Many commercial banks have opened their own online apps. Customers can effectively

query and manage personal accounts by downloading and registering apps. At the same time, banks can also use apps to push business content to customers, and timely notify customers of changes in related business policies. Improve the bank's business handling capabilities.

Sixth is medical services. In the medical industry, time is life, and every second is precious to patients. When an emergency rescue event occurs, using wireless technology, ambulances can quickly get in touch with family members on the way to the hospital to realize the rapid, real-time, and dynamic exchange of illness and data. This wireless medical business model can not only save the lives of patients in time but also greatly improve the efficiency of hospital treatment and save the waste of various resources. At the same time, it is for insurance companies. It can be seen that mobile e-commerce has great room for development in the medical market. At the same time, patients can register and pay for medical consultations through the hospital's APP platform or WeChat official account platform, which saves time in queuing and promotes the smooth flow of the hospital's diagnosis and treatment system [7, 8].

2.2.2. Features and Advantages of Mobile E-Commerce.

First, it is convenient and efficient. Mobile terminal devices such as smartphones are not only a mobile communication tool but also a mobile POS machine because of their powerful online security payment function. Online business transactions and banking services can be carried out at any place and at any time. You can also make payments for offline store transactions [9].

Second is safety. Using mobile terminal devices for online and offline payments can avoid the inconvenience of cash payments and enhance the security of transaction payments. At the same time, customers who use mobile banking can use the bank's key to encrypt information and strengthen the security of financial information [10].

Third, it is not limited by time and space. The biggest advantage of mobile e-commerce lies in its mobility, which is different from wired e-commerce. Mobile e-commerce is based on wireless and mobile communication equipment. Users can obtain the information they want anytime and anywhere through mobile communication equipment and services, including news and information browsing, game entertainment, and shopping transactions [11, 12].

Fourth, it is more open and inclusive. Since the access method of mobile e-commerce is wireless, the barrier to entry is particularly low. Anyone can enter the online world as long as they have mobile terminal equipment. This makes the extension of the cyberspace wider and open. At the same time, it is because of its diversity that makes mobile e-commerce more inclusive [13].

Fifth, it is easy to promote. In today's Internet society, people are basically unable to move without a network without a smartphone. It can be said that today's social structure is basically based on the Internet. The flexible and convenient features of mobile communications make people increasingly rely on it. To solve all the problems of consumption in life, it can be seen that the promotion of mobile e-commerce is extremely simple [14].

Sixth, the potential users are huge. According to statistics, as of March 2020, the number of Internet users in my country has reached 904 million, and the Internet penetration rate has reached 64.5%. As the most populous country in the world, the number of Internet users in my country is likely to increase further. The data are followed by large-scale mobile communication device users [15].

2.3. Influencing Factors of E-Commerce Logistics Customer Satisfaction. E-commerce logistics is the last link in the e-commerce transaction process, and it is also a key link. After e-commerce companies or individual shops (hereinafter collectively referred to as e-commerce sellers) complete online product transactions with consumers, the goods will be delivered to consumers by a third party in a logistics way [16, 17]. In essence, this logistics delivery process is the logistics service provided by e-commerce logistics companies for e-commerce sellers and consumers. That is, the satisfaction of the logistics services provided by both parties to the transaction should be evaluated by both parties. However, in the actual operation process, consumers' evaluation of logistics services is often an important indicator to define e-commerce sellers. When consumers are not satisfied with logistics services, the corresponding impressions of e-commerce sellers' evaluation will also get worse, and at this time, e-commerce sellers' satisfaction with e-commerce logistics companies will also decrease [18, 19]. In summary, we can conclude that the factor that affects customer satisfaction is the service quality of e-commerce logistics, and the quality of logistics services is reflected in the timeliness, accuracy, completeness and timely update of logistics information of the logistics service party, and also includes good communication with customer service personnel after-sales processing and problem solving [20, 21].

2.4. Impact of Mobile E-Commerce Platforms on E-Commerce Logistics Customer Satisfaction. The construction of the mobile e-commerce platform is a concrete manifestation of the transition from the traditional e-commerce model to the mobile e-commerce model [22, 23]. Through this platform, the security authentication of user information can be achieved, and the security of e-commerce transactions can be improved. In addition, the platform brings all shops together for management, which can promote the integration and layout of merchandise in sales and improve the timeliness of merchandise in order information processing and logistics tracking [24].

3. Construction of Mobile E-Commerce Platform Based on Smart Sensor Technology

3.1. Mining and Processing of Mobile E-Commerce Information and Data by Smart Sensor Technology. This paper proposes to use smart sensor technology to mine and analyze the massive data information and resources of mobile e-commerce and to realize the new mobile e-commerce platform by combining the calculation and processing of the traditional e-commerce platform and the big data of mobile devices.

Because the number of big data is massive, it is necessary for us to integrate and classify the data first. Here, we use a tree-based lifting algorithm (XGBoost). This is a tree learning algorithm for processing sparse data.

Given a data set D , suppose it has n samples and m features, let

$$D = \{x_i, y_i\} (|D| = n, \quad x_i \in R^m, \omega \in R^T), \quad (11)$$

$$\hat{y}_i = \Phi(x_i) = \sum_{k=1}^K f_k(x_i), \quad f_k \in F. \quad (12)$$

Among them $F = \{f(x) = w_q(x)\} (q = R^m \rightarrow T, \omega \in R^T)$ is the regression tree space. q represents each tree structure, T is the number of leaves, and w is the weight value. Minimize the above objective function to get

$$\Lambda(\Phi) = \sum_i l\left(\hat{y}_i, \hat{y}_i^{(t-1)} + f_t(x_i)\right) + \Omega(f_k). \quad (13)$$

Set $I_j = \{i | q(x_i) = j\}$ as the node of the j leaf, and expand Ω into

$$\Lambda^{(t)} = \sum_i^n \left[g_i f_i(x_i) + \frac{1}{2} h_i f_i^2(x_i) \right] + \gamma T + \frac{1}{2} \lambda \sum_{j=1}^T w_j^2. \quad (14)$$

For a fixed tree structure, we calculate the optimal weight of leaf j as

$$w_j^* = \frac{\sum_{i \in I_j} g_i}{\sum_{i \in I_j} h_i + \lambda}, \quad (15)$$

$$h_t = \tanh(w_c x_t + u_c (r_t \ominus h_{t-1}) + b_c). \quad (16)$$

Corresponding optimal value is

$$\hat{\Lambda}^{(t)}(q) = \frac{1}{2} \sum_{j=1}^T \frac{\left(\sum_{i \in I_j} g_i \right)^2}{\sum_{i \in I_j} h_i + \lambda} + \gamma T. \quad (17)$$

After setting data set A_1, A_2, \dots, A_n , there are

$$P\left(\frac{A_i}{M}\right) = \frac{P(M/A_i)P(A_i)}{\sum_{j=1}^n P(M/A_j)P(A_j)}, \quad (18)$$

$$\sum_{i=1}^n P(A_i) = 1, \sum_{i=1}^n P\left(\frac{M}{A_i}\right)P(A_i) = \sum_{i=1}^n P(M, A_i) = P(M). \quad (19)$$

Among them, $P(A_i)$ represents the occurrence of the event, and A_1, A_2, \dots, A_n represents the possibility of the event. Using tree-based lifting learning algorithm to get

$$P\left(\frac{A_j}{M_1}, M_2, \dots, M_n\right) = \frac{P(M_1, M_2, \dots, M_n/A_j)P(A_j)}{P(M_1, M_2, \dots, M_n)}, \quad (20)$$

$$\left(\frac{A_j}{M_1}, M_2, \dots, M_n\right) = \max_{1 \leq j \leq m} P\left(\frac{A_j}{M_1}, M_2, \dots, M_n\right). \quad (21)$$

The above algorithm is used to evaluate the segmented features. As a kind of machine, the smart sensor needs to go through multiple rounds of training to get the best results, that is, extract the most representative features. The calculation formula of the evaluation index is as follows:

$$\text{accuracy} = \frac{TP + TN}{TP + TN + FP + FN}, \quad (22)$$

$$\text{precision} = \frac{TP}{TP + FP}, \quad (23)$$

$$\text{recall} = \frac{TP}{TP + FN}, \quad (24)$$

$$F1 = 2 \times \frac{\text{precision} \times \text{recall}}{\text{precision} + \text{recall}} \quad (25)$$

To verify the effectiveness of the method proposed in this article, three experiments are carried out in this article.

Experiment 1. Conduct comparative experiments with mainstream models in the deep learning field. *Experiment 2.* Conduct comparative experiments with the methods proposed in other papers. *Experiment 3.* Change the number of iterations of the capsule network to conduct a comparative experiment. *Experiment 4.* Test model performance on two data sets.

3.2. Architecture Selection of Mobile E-Commerce Platform. Due to the small bandwidth and limited operating speed and memory of mobile terminal devices such as smartphones and tablet computers, it is necessary to fully consider

reducing the network traffic and storage of mobile terminal devices when selecting the system structure for the platform. Big factor, we finally selected the B/S structure as the architecture of this platform design. However, in different periods of the development of the Internet, the B/S structure model is also different. If we want to choose the structure model suitable for this platform, we also need to conduct a specific analysis of the B/S structure model.

3.2.1. Traditional Two-Tier Structure Model. The two-tier structure model originated in the early stage of the development of the Internet. It is a relatively simple structure. The user sends a request to the server through the browser, and the server responds after receiving the request and sends the requested page to the user. In this structure model, only a unilateral change of the server can only be accepted by the user. Therefore, the page is static and cannot achieve interaction between the two parties. Obviously, this structural model is not applicable today.

3.2.2. Three-Tier Structure Model. Different from the two-tier structure model, the three-tier structure model adds an application server and a database server, which avoids the situation where the user cannot interact with the server program. In addition, the simple user end of the two-tier structure model also becomes a client. By installing the application, the browser is responsible for processing the user's page request and interacting with it, sending the request to the application server and interacting with the application server; the application server is responsible for processing the application logic, that is, receiving the user from the client. After the request, it is transformed into a database request and then interacts with the database server and finally transmits the result of the database server interaction to the client. Although the three-tier structure model maximizes the interaction between the user and the server, the generated data and performance data are concentrated in the dynamic page at the same time, which makes the dynamic page too large, which is easy to cause confusion in logic processing and is not conducive to system development and maintenance, but also brings security risks to the system.

3.2.3. Four-Layer Structure Model. Based on the above two structural models, we propose a four-layer structural model here. The four-tier structure model is composed of the user side, the presentation layer, the logic layer, and the database. When the user sends a request to the background server through the browser, the static page will request the background server, and the dynamic page will be responsible for the performance of the application. Logic processes the request logically and interacts with the database. Finally, the interaction result is returned to the background server, and the server sends the result to the browser. The user can obtain the information they want through the browser page. Compared with the first two structural models, the four-tier structure model is more secure and reliable, and when

applied to the website platform, it can also save costs and improve the efficiency of information transmission. Therefore, the mobile e-commerce platform designed in this article finally adopts the B/S structure the four-layer network structure model.

4. Impact of E-Commerce Logistics Customer Satisfaction

As shown in Figure 1, the main factor affecting e-commerce logistics customer satisfaction is the service quality of logistics, and the service quality of logistics is embodied in many aspects. E-commerce companies must analyze these influencing factors from multiple perspectives and continuously optimize and upgrade the relevant functions of the platform, so as to improve the quality of e-commerce logistics services and improve customer satisfaction. To analyze the e-commerce logistics service quality, we have to analyze the e-commerce logistics system model. The general e-commerce logistics system model is shown in Figure 2.

At present, there are many large-scale mobile e-commerce platforms in China, such as Taobao, JD.com, and Tmall. These e-commerce companies have their own different logistics and distribution models. The differentiation of logistics and distribution models will also bring customers a different shopping experiences, as shown in Table 1.

As shown in Figure 3, according to different logistics distribution models, this paper selects JD and Taobao as the research objects. By analyzing and comparing the differences in the logistics distribution models of the two e-commerce platforms, the importance and satisfaction of the index factors that affect the quality of logistics services are calculated. Provide a reference for the improvement of logistics service quality of e-commerce enterprises.

4.1. Influence of Network Evaluation on Customer Satisfaction. Many market surveys have found that, before buying unfamiliar products, consumers often consider whether to choose to buy by browsing the comments on the website, and online evaluation has increasingly become an important factor in consumer purchase decisions. Online evaluation is the real feedback from users who have bought the actual situation of the product, which is an important indicator of the purchase decision for consumers who have not purchased.

Such online evaluation generally includes product quality, logistics service quality, and purchased user satisfaction. In addition to online reviews, the credibility, word-of-mouth, and popularity of the website platform will also profoundly affect the shopping decisions of potential consumers. In this survey, we have conducted statistics on relevant indicators for certain shops in JD and Taobao, and the results are shown in Table 2 and Figure 4.

According to Figure 5, the evaluation of online users is the main factor considered by consumers when they purchase unfamiliar products, accounting for 38.9% of all factors, followed by the popularity and reputation of the website, accounting for 29.12%. In addition, we can see the

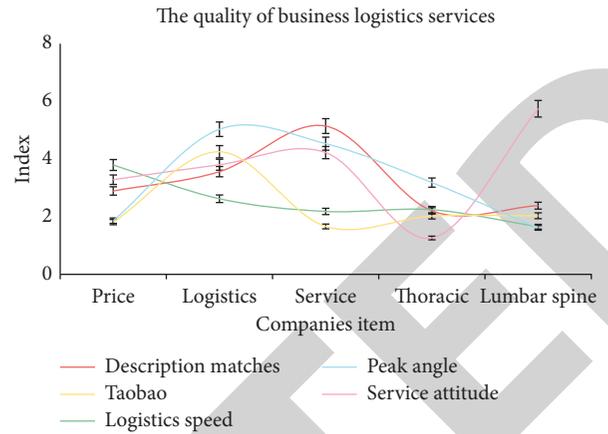


FIGURE 1: The quality of business logistics services.

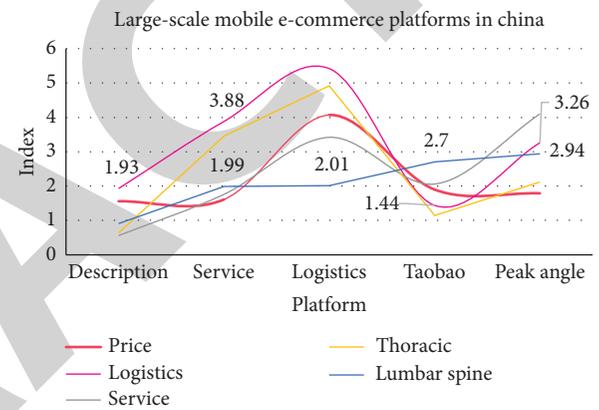


FIGURE 2: Large-scale mobile e-commerce platforms in China.

TABLE 1: Differences in logistics distribution models of e-commerce platforms.

Item	Price	Logistics	Service	Thoracic	Lumbar spine
Description	3.61	1.88	3.47	4.18	3.41
Service	5.56	6.45	2	3.95	6.91
Logistics	5.36	3.19	6.92	4.62	6.57
Taobao	4.12	5.56	5	6.06	2.01
Peak angle	1.04	5	2.38	6.56	5.89

speed of logistics distribution and after-sales service also have a great impact on consumers' purchasing decisions, accounting for 18.45%. This shows that the speed of logistics and after-sales service is helpful for studying the quality of logistics services.

4.2. JD and Taobao's Internet Evaluation Mode. As shown in Figure 6, according to the JD APP application, we can find that the evaluation form is mainly divided into scores, tags, experience, and posting. The scoring standard is the highest 5 points and the lowest 1 point. It is worth noting that, in the evaluation list, JD.com has specifically listed the evaluation of satisfaction with logistics services, including product packaging satisfaction, delivery speed satisfaction, and

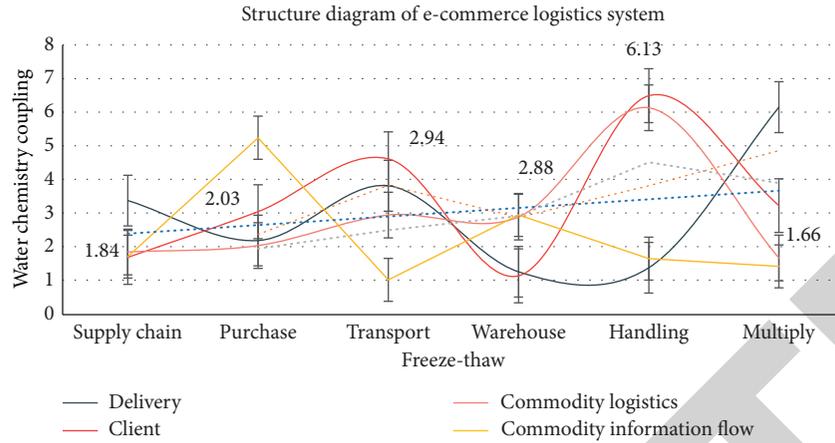


FIGURE 3: Structure diagram of e-commerce logistics system.

TABLE 2: Main factors considered by online shoppers when buying unfamiliar products.

Internet user evaluation	The visibility and reputation of the website platform	Price	Logistics distribution speed and after-sales service	The size of the discount, with or without gifts
38.90%	29.12%	18.45%	11.23%	2.30%

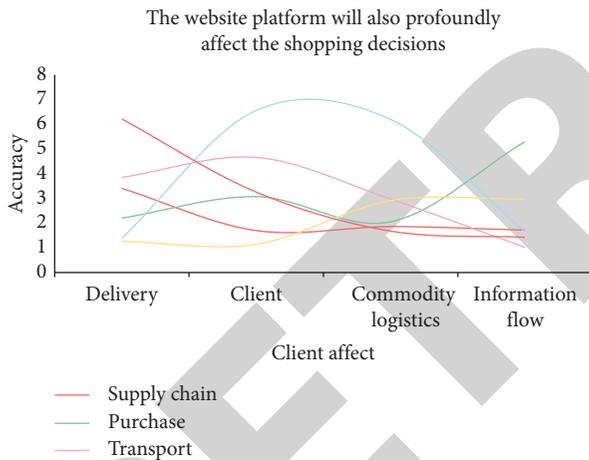


FIGURE 4: The website platform will also profoundly affect the shopping decisions.

delivery staff's service satisfaction and also lists the contact information of the delivery staff.

It can be seen from Table 3 that JD is in the quality of logistics service pays special attention to the service quality of delivery personnel. Different from JD.com, the product evaluation system set by Taobao is judged by stars. Taobao calculates the favorable rate based on the star ratings of users and displays it on the page to give consumers an overall impression. At the same time, Taobao will set tags to both good and bad aspects of user evaluation are displayed, allowing consumers to more intuitively understand the weaknesses and deficiencies of the product. When viewing the evaluation, Taobao can also be viewed in time sorting and intelligent sorting. The network evaluation models of the two major e-commerce platforms are shown in Table 4.

4.3. Factors Affecting Logistics Service Quality under the Logistics Distribution Mode of JD and Taobao

4.3.1. Analysis of Factors Affecting JD Logistics Service Quality. As shown in Figure 7 and Table 5, we extracted 131,890 comments from online users of JD Mall. We used the statistical analysis software SPSS22.0 to analyze and process all the comments obtained and screened out 78,267 comments related to logistics services. There are 37,811 comments on logistics factors and 12,318 related to the integrity of the delivered goods. The importance is $12318 \div 37811 = 32.57\%$. The satisfaction degree is the number of user reviews divided by the total number of reviews.

The number of positive reviews from the survey is 315, the satisfaction rate is $315 \div 12318 = 2.55\%$. In addition to the integrity of the delivered goods, there are other things such as the accuracy of the delivery time, the delivery speed, and the service attitude of the delivery personnel. The importance and satisfaction of the specific logistics service quality factors are shown in Table 6.

At the same time, we ranked the importance and satisfaction of each factor and plotted it as shown in Figure 8.

In Figure 8, the abscissa represents the ranking of importance, and the ordinate represents the ranking of satisfaction. The total ranking of importance ranks 9th, and the total satisfaction ranking ranks 8th. According to the data, it is not difficult to see that the users of JD Mall attach great importance to the integrity of the delivered goods, the accuracy of the delivery time, and the service attitude of the delivery personnel in terms of logistics services.

As shown in Table 7, the accuracy of the delivery time ranks first. The second is the integrity of the delivered goods and the service attitude of the delivery personnel, ranking 2 and 3, respectively. In the satisfaction section, users are satisfied with the accuracy of the delivery time; the delivery staff's service

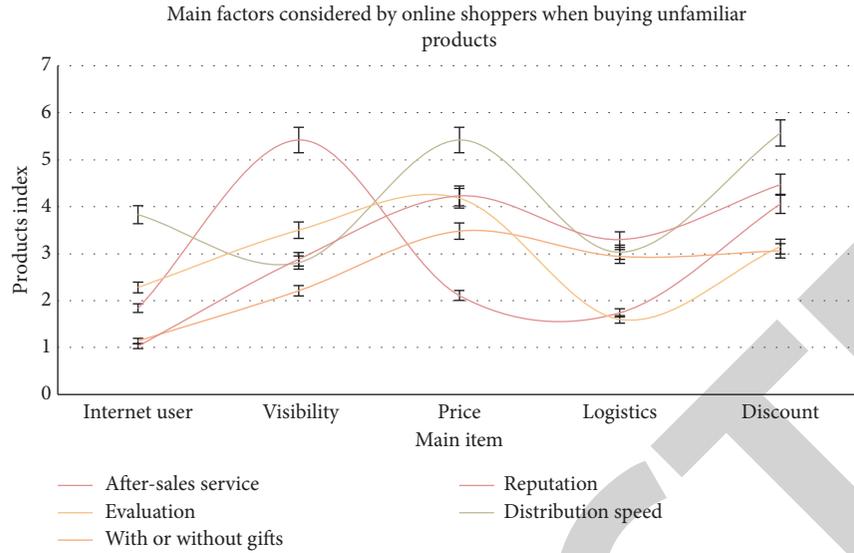


FIGURE 5: Main factors considered by online shoppers when buying unfamiliar products.

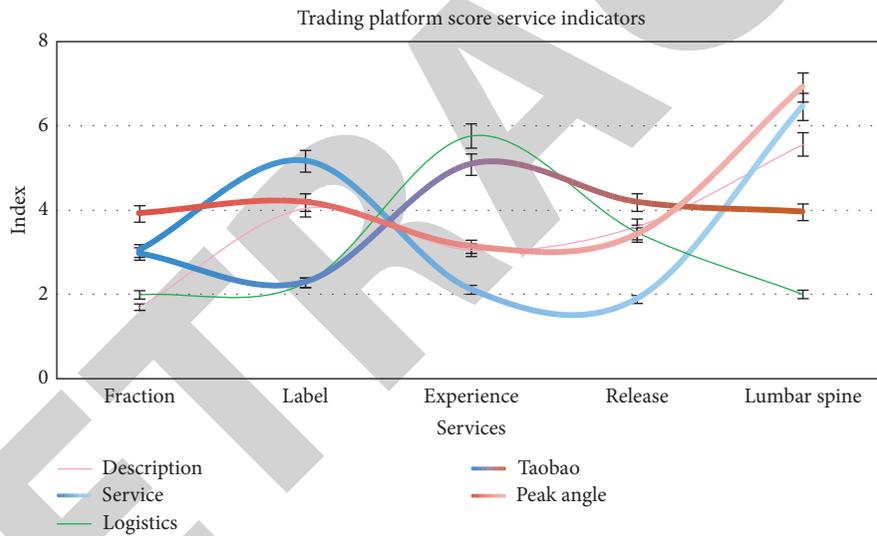


FIGURE 6: Trading platform score service indicators.

TABLE 3: User star rating to calculate the discount rate and display it on the page.

Item	Description	Service	Logistics	Taobao	Peak angle
Fraction	1.69	3.03	1.99	2.96	3.91
Label	4.04	5.16	2.27	2.28	4.18
Experience	3.05	2.11	5.76	5.08	3.13
Release	3.61	1.88	3.47	4.18	3.41
Lumbar spine	5.56	6.45	2	3.95	6.91

TABLE 4: Network evaluation models of JD.com and Taobao.com.

Overall score and specific evaluation	Logistics Service Evaluation					Classification		
	Label	Product packaging	Delivery speed	Delivery staff service attitude	Description matches	Service attitude	Logistics speed	
JD.com	Yes	Yes	Yes	Yes	No	No	No	
Taobao	Yes	No	No	Yes	Yes	Yes	Yes	

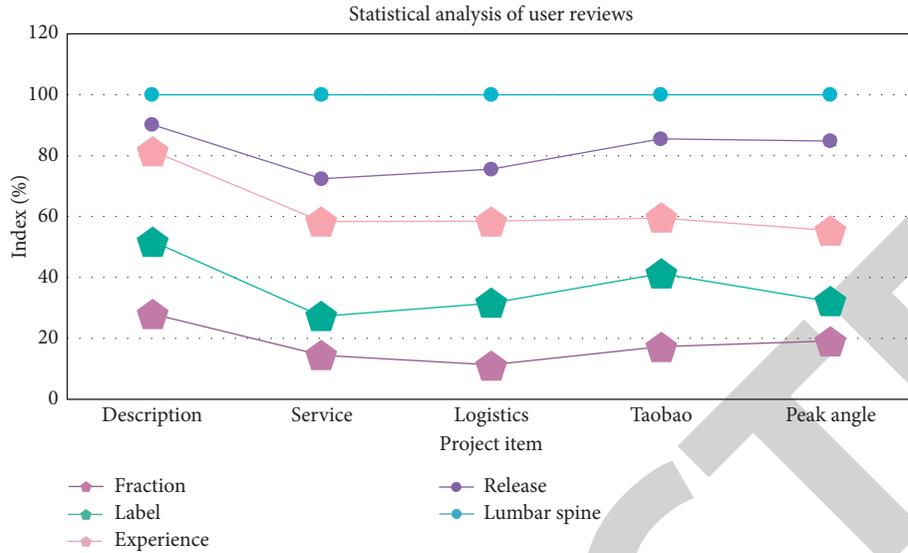


FIGURE 7: Statistical analysis of user reviews.

TABLE 5: Delivery speed and delivery staff's service attitude.

Item	Fraction	Label	Experience	Release	Lumbar spine
Description	1.83	1.56	1.93	0.56	0.64
Service	1.8	1.61	3.88	1.76	3.45
Logistics	2.27	4.07	5.42	3.42	4.92
Taobao	1.37	1.9	1.44	2.06	1.15
Peak angle	2.68	1.79	3.26	4.1	2.12

TABLE 6: Importance and satisfaction of factors affecting JD logistics service quality.

	Importance (%)	Satisfaction (%)
Integrity of delivered goods	32.57	2.55
Accuracy of delivery time	36.15	48.36
The correctness of the delivered goods	1.20	0
Service attitude of delivery staff	10.25	50.36
Delivery speed	4.85	61.64
Whether the logistics information is updated in time	3.05	0
The outer packaging of the goods is reasonable and in good condition	36.87	21.14

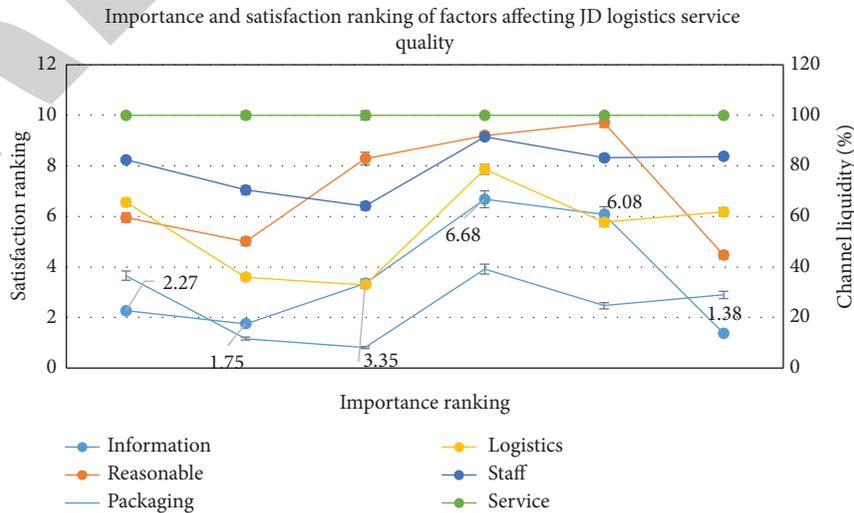


FIGURE 8: Importance and satisfaction ranking of factors affecting JD logistics service quality.

TABLE 7: Delivery staff's service attitude and delivery speed.

Item	Information	Reasonable	Packaging	Logistics	Staff	Service
Trans	2.27	3.68	5.74	4.55	2.64	2.77
Integrity	1.75	3.26	1.23	2.56	3.63	3.12
Accuracy	3.35	4.94	1.06	3.23	4.08	4.69
Correctness	6.68	2.52	6.72	6.78	2.21	1.46
Attitude	6.08	3.63	5.18	6.95	5.36	3.53
Delivery	1.38	3.09	5.85	6.64	4.44	3.29

TABLE 8: Importance and satisfaction of factors affecting Taobao logistics service quality.

	Importance (%)	Satisfaction (%)
Integrity of delivered goods	37.52	5.79
Accuracy of delivery time	41.10	35.63
The correctness of the delivered goods	1.65	0
Service attitude of delivery staff	7.31	13.27
Delivery speed	6.77	63.27
Whether the logistics information is updated in time	1.05	0
The outer packaging of the goods is reasonable and in good condition	24.29	29.15

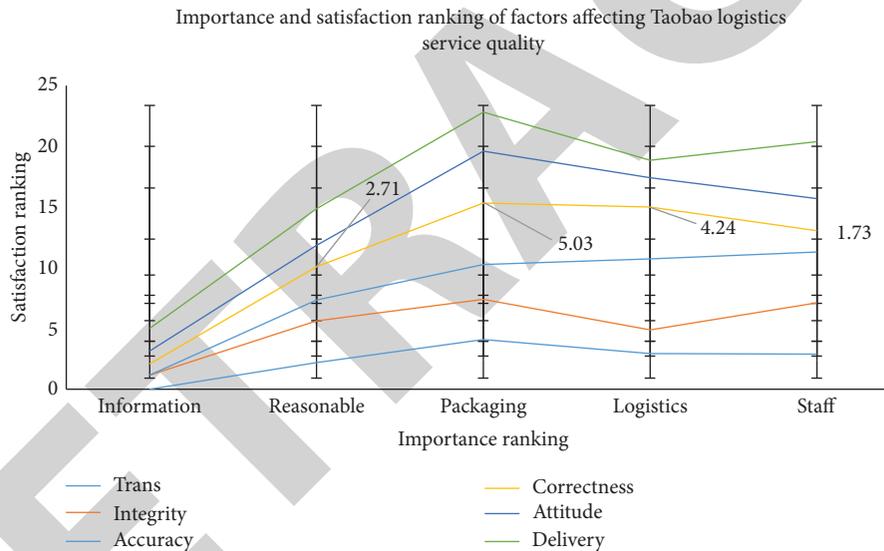


FIGURE 9: Importance and satisfaction ranking of factors affecting Taobao logistics service quality.

attitude and the delivery speed is the highest, reaching 48.36%, 50.36%, and 61.64%, respectively. However, users have shown low satisfaction with regard to the outer packaging and integrity of the goods. This shows that although the selfoperated logistics model of JD Mall is affirmed and satisfied by users, it is still in the sorting and transportation of warehousing. To strengthen management and improvement.

4.3.2. Analysis of Factors Affecting Taobao Logistics Service Quality. Using the same method, the importance and satisfaction of the factors influencing Taobao logistics service quality and their respective ranking statistics are carried out. The results are shown in Table 8.

From Figure 9, it can be seen that the main factors affecting the quality of Taobao logistics service are the integrity of the delivered goods, the accuracy of the delivery time, and the outer

packaging and integrity of the goods, with their importance reaching 37.52%, 41.1%, and 24.29%, respectively. Rankings are 2nd, 1st, and 3rd in order, which means that Taobao users attach great importance to the integrity of the goods and delivery time; in terms of satisfaction, the satisfaction of delivery speed reached 63.27%, ranking no. one, indicating that users are relatively satisfied with the delivery speed of Taobao's products, while satisfaction with the service attitude of the delivery staff and the integrity of the delivered products is relatively low. Therefore, Taobao should strengthen the speed of product logistics and delivery personnel management.

5. Conclusions

Network infrastructure, security certification, payment methods, and logistics distribution have always been

important factors affecting the development of e-commerce. In recent years, with the development and improvement of mobile network communication technology and credit security and confidentiality systems, e-commerce has gradually developed in the direction of mobile e-commerce. Wired business transactions have turned into wireless mobile business transactions. The network infrastructure has been further improved. At the same time, the optimization and upgrading of the online secure payment system have solved the problems of e-commerce security authentication and payment methods. However, the logistics and distribution of e-commerce have been plagued by e-commerce companies and hindered their further development.

As an important part of mobile e-commerce transactions, logistics has an important influence on the development of mobile e-commerce. The quality of logistics services is directly related to customer satisfaction and product loyalty to e-commerce companies. According to relevant surveys consumers, believe that the quality of logistics service accounts for 52.18% of the good shopping experience. It can be seen that mobile e-commerce users value the service quality of commodity logistics very seriously, which may be one of the key factors affecting their shopping willingness.

This study takes two major domestic e-commerce platforms, JD and Taobao, as examples. Through the analysis of online user evaluations, the importance and satisfaction of the factors that influence the quality of logistics services under various logistics distribution models are investigated. Integrity, delivery time accuracy, delivery staff service attitude, delivery speed, packaging, and product integrity are the most important factors that affect the quality of logistics services. The study is a dynamic logistics strategy that enables e-commerce companies to better manage and upgrade their logistics service models, continually improve logistics, and distribution timeliness and help customers understand and understand delivery locations. It suggests that the information needs to be updated in a timely manner. Improving customer satisfaction with goods and thereby customers' e-commerce logistics, strengthens customer loyalty to products and companies, thereby facilitating the rapid development of mobile e-commerce.

Data Availability

No data were used to support this study.

Conflicts of Interest

The author declares no conflicts of interest.

Acknowledgments

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