

Research Article

The Order Financing Risk Evaluation under the Financial Supply Chain Model Based on the Logistic Model

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Order financing, as an innovative business in the financial supply chain model of banks and other financial institutions, has served more and more small and medium-sized enterprises in recent years, and has also brought new profit points to the financial and logistics industries. Businesses urgently need to carry out relevant risk evaluation research on the risks brought by banks and other financial institutions. Based on this background, this article has carried out relevant research on the construction and evaluation method of the risk evaluation index system of order financing business. Through project research and literature review, the research on the risk evaluation theory and method of order financing carried out by banks and other financial institutions is not perfect. The role-played in order financing and the key risk variables faced by financial institutions, and innovatively proposed an evaluation method based on the logistics model. Based on the analysis of order financing risk factors, and through literature review and expert interviews, an evaluation index system initially constructed from five aspects: financing companies, downstream core companies, logistics companies, supply chain operations and external environment. Through questionnaire surveys and statistical analysis of the survey results, a complete, qualified risk evaluation index system for order financing business was finally determined. Taking the order-financing project jointly carried out by commercial banks and logistics companies as an example.

1. Introduction

Nowadays, the mode of global economic competition has undergone tremendous changes. The competition between enterprises and enterprises in the past has been transformed into competition between the supply chain and the supply chain where the enterprises are located. Among the several important components of the supply chain, the flow of funds is one of the important components of its operations. Because the intraproduct division of labor increases the transaction links, it also increases the scale and frequency of trade, which also increases the capital needs and corresponding costs of the enterprise. In the supply chain, superior companies rely on their scale advantages and enjoy a high reputation in traditional financial institutions' credit. These companies are considered low-risk lending institutions. The setting of the supply chain needs to consider the scale and operational capacity of the enterprise itself. The

credibility of traditional financial institutions can protect enterprises against certain risks. The quality of the supply chain directly affects the development and financing ability of enterprises. On the one hand, the company's foreign trade will occupy part of the funds. At the same time, the company's financial costs will also be passed on to upstream and downstream enterprises in its own industrial chain. Due to its central position in the supply chain, some unequal conditions can usually be adopted. The company's trade transfers capital occupation and financial costs to small and medium-sized enterprises upstream and downstream of the supply chain, and core companies often have little demand for funds and high requirements for financing costs. However, in traditional financial institution credit, small and medium-sized enterprises in the supply chain are considered are high-risk lenders. These enterprises often have difficulty in obtaining funds. Even if they obtain funds, they have to pay higher costs, making them less expensive [1–3]. The

profits are even more meager. Therefore, the imbalance and asymmetry of capital supply and demand and financial affordability caused by this traditional credit model will inevitably pose a threat to the stability of the supply chain [4–8].

Therefore, in the financial supply chain model, in order to strengthen the financing convenience of small and medium-sized enterprises and reduce the related financing costs, some innovative financial products are inevitably needed to develop the supply chain capital flow and promote the stable development of the supply chain. In addition, taking into account the actual needs of supply chain related enterprises. Appropriate reduction of financing costs will help enterprises survive in the market environment and promote the stable development of small and medium-sized enterprises. The development of the financial supply chain model is of great help to the small and medium-sized enterprises with limited funds and financing difficulties. The development of the financial supply chain model can be said to be for small and medium-sized enterprises with tight funds and financing difficulties. Small-sized enterprises give charity in need, and this is also fully considered from the perspective of small and medium-sized enterprises [9–13]. It better depends on the structure of the supply chain and the transaction characteristics of related members in the chain, and takes advantage of the channel advantages of the core enterprises and intermediary enterprises in the supply network. As well as the circulation value of the goods [14–17], it provides comprehensive financing services to a single or multiple small and medium-sized enterprises in the supply chain in Figure 1.

In recent years, the order financing business has been recognized by more and more companies as an innovative product for banks and other financial institutions to carry out supply chain financial services [18–23]. At the same time, although my country's third-party logistics companies that provide professional services have developed rapidly, most of their businesses only stay in traditional service areas such as transportation and warehousing. Very few logistics companies carry out the business of financial supply chain [24, 25]. Third-party logistics companies have their unique advantages when developing this business, especially in the era of supply chain competition. Because compared with banks, third-party logistics companies have a better understanding of the business strength and status of SMEs and their trade relations with downstream companies, as well as the specifications, models, quality, and value of the goods involved in order financing, so that they can better supervision of financing companies [26–29]. Moreover, as the guarantor of the financing enterprise in the order financing project, the third-party logistics company also has the warehousing, distribution, and supervision functions that other guarantee companies lack, so it can more effectively solve the difficulties in the financing of SMEs [30–32]. This makes it more smoothly financing than before, which is also favored by small and medium-sized enterprises. In addition, logistics companies themselves have a strong desire to carry out order financing, which is an effective way for them to expand their business

models and increase profits. Nowadays, more and more third-party logistics companies are continuously expanding their business scope. They are cooperating with banks and other financial institutions to carry out order financing business. The guarantor of the financing enterprise indirectly improves the credit of the SMEs and alleviates the financing difficulties of the SMEs, thereby increasing the value of its own additional services and realizing its more comprehensive value. Moreover, the smooth development of this business can effectively reduce the self-operated logistics of small and medium-sized enterprises, develop logistics outsourcing, and enhance the linkage effect between logistics enterprises and production enterprises. Since third-party logistics companies have joined them, the order financing business is also an innovative product of the cooperation between the financial industry and the logistics industry, that is, a major business of logistics finance.

To a certain extent, order financing business has certain advantages over traditional credit business. Order financing is relatively more cost-effective. With the deep participation of the financial industry and the logistics industry, this financial innovation business has developed rapidly. In recent years, Citibank and BNP Paribas have frequently cooperated with professional third-party logistics companies. Provide financial services in the form of financial service chains. The specific content includes order financing business. In addition, some foreign financial institutions have also set up specialized logistics banks. For example, in 1999, Morgan Stanley invested US\$350 million in the listed logistics company Redwood-Trust to develop supply chain financial services; and UPS acquired the United States. First International Bank established a special UPS financial company to provide customers with a full range of supply chain financial services to achieve a high degree of synchronization of its logistics, information flow and capital flow. In recent years, Taiwan Province of my country has also carried out a large number of order financing services. For example, Taizhou Group [33–35], which is known as the “iron bill” in Taiwan, has a very high degree of credibility. As long as the supplier who receives the order completes the order according to the contract, Taizhou will deliver the payment on time, so financial institutions are happy to use this “iron bill” as financing collateral for order financing. With the effective integration of the financial industry and the logistics industry, the order financing business has also achieved greater development in the Mainland. In my country's Yangtze River Delta and Pearl River Delta regions, a large number of well-known international companies have established large-scale core factories. With the gradual development of related businesses of these core manufacturers, many small and medium-sized enterprises have become an important part of the manufacturing supply chain around them. In this background [36, 37], Monishing Bank and Shenzhen Development Bank have cooperated with logistics companies to carry out extensive order financing business around these small and medium-sized enterprises. It is believed that with the maturity and development of order

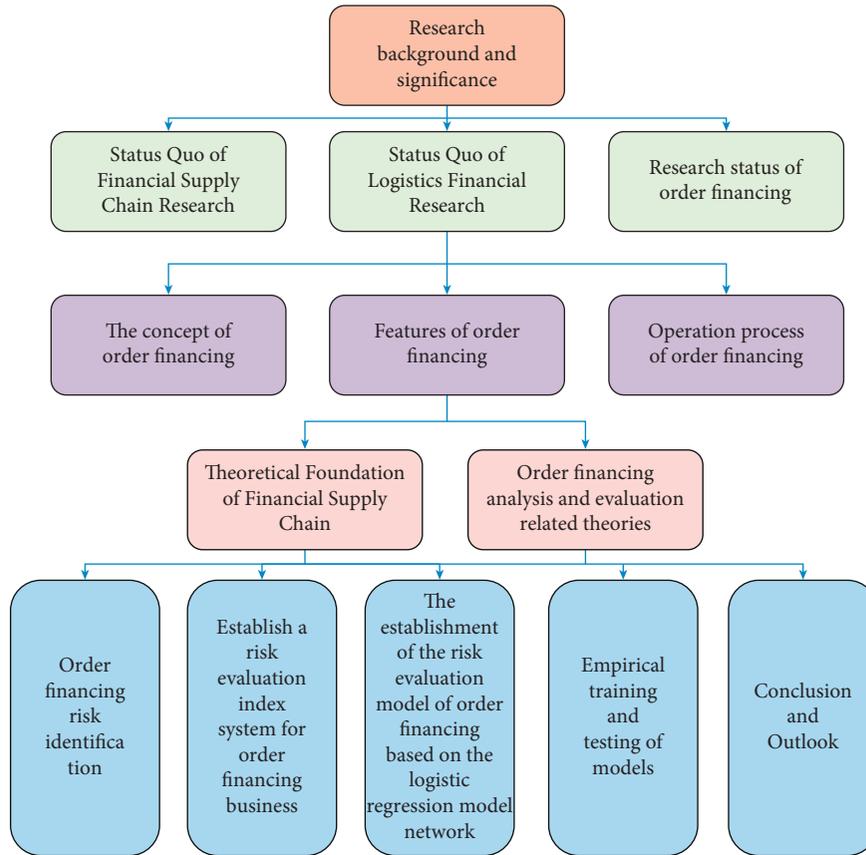


FIGURE 1: The structure of the financial supply chain model.

financing and the addition of third party logistics companies to this chain and network, China’s logistics industry will develop and prosper faster.

2. The Theoretical Basis of Supply Chain Finance

2.1. *Supply Chain Channel Theory.* In the process of studying the impact of marketing relationships on the company, the concept of Marketing Channel was put forward. The company in the channel focuses on the marketing of new products existing products, and at the same time introduces the concept to the property rights channel Ownership Channel, Negotiations Channel, Financing Channel, and Logistics Channel. (1) The property rights channel is a process of property rights transfer, which mainly refers to the transfer of goods property rights in the operation of the supply chain. The important content of the transfer of property rights lies in the dredging and adjustment of channels. The supply chain links involve the transfer process and transfer ideas of different commodity property rights. The transfer of property rights in goods is generally not considered to be expressed in the form of physical goods. The rise of the concept of property rights in goods has also been continuously strengthened in different periods. The goods here may not appear in physical form, or even not exist at all. (2) The negotiation channel focuses on the various

transaction methods and related risks and costs required by the buyer and the seller to reach the goods purchase agreement. Mainly include face-to-face transactions, telephone, email, EDI and other forms of communication. (3) The funding channel solves the problem of payment for goods and, more importantly, the problem of corporate credit. (4) The most critical function of logistics channels for the entire channel is the classification function, which is to rearrange products according to the channels through which products flow to customers, and reclassify large single products according to quantity, type and customer needs. Among them, marketing channels are closely related to capital channels and logistics channels. On the one hand, price subsidies are a commonly used promotion method; on the other hand, logistics channels used in the marketing process to accurately and quickly deliver goods such as advertising resources and promotional items. The necessary protection is shown in Figure 2.

2.2. *Principal-Agent Theory.* The principal-agent relationship refers to the mutual relationship between market participants who divide information advantages and disadvantages. From an economic perspective, the principal-agent relationship is an economic relationship in which the information held by both market participants is asymmetric. The principal-agent relationship specifically refers to the mutual relationship between market participants and

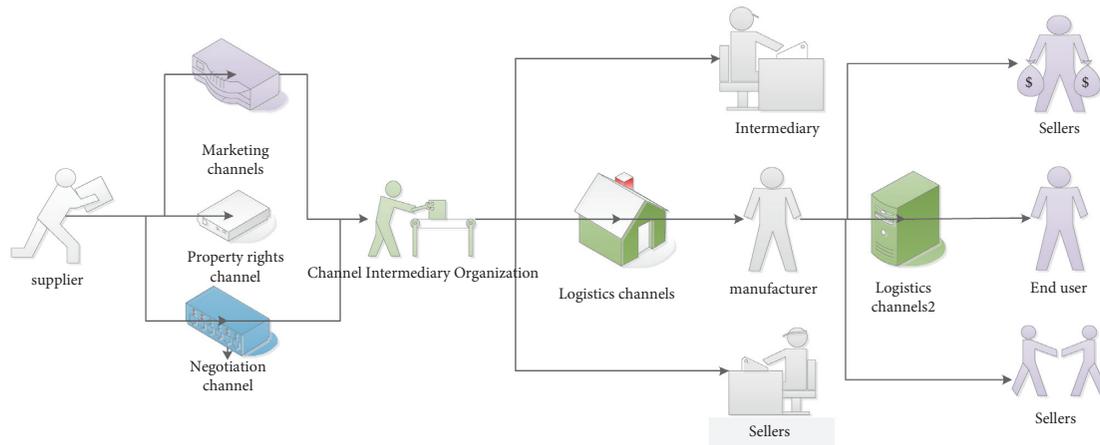


FIGURE 2: Supply chain channel model.

suppliers. It represents whether the market supply and demand relationship meets the actual demand. From an economic point of view, the principal-agent relationship is an economic relationship, and the information held by both market participants is asymmetric. One of the key points of the doctrine that solves the “moral hazard” behavior of the agent and how to share the risk between the agent and the principal is to design an “optimal contract” that is beneficial to both the principal and the agent. This definition points out two key points of the principal-agent relationship: one is the problem of unobservable ability, that is, the problem of adverse selection caused by information asymmetry; the other is the problem of unobservable effort, that is, the problem of moral hazard.

In order financing, the relationship between banks and other financial institutions and logistics companies is the principal-agent relationship. The bank is in the position of the principal, and the logistics company is the cooperative agent. There is a problem of information asymmetry between the two parties. At the same time, the relationship between the bank and the financing SMEs can also be regarded as a principal-agent relationship. There are also serious information asymmetries.

When banks provide financing services for small and medium-sized enterprises through order financing, logistics companies assist the banks in jointly supervising and controlling credit risks to the greatest extent. They are banks' cooperative agents, although logistics companies have passed on and shared the burdens of banks to a certain extent. Risk, effectively improving financing efficiency, but for banks, it is not eliminate the possibility of joint fraud by logistics companies and financing companies, which also creates additional risks. Nevertheless, supply chain finance considers financing companies in the entire supply chain, including logistics companies cooperating with banks, rather than just considering themselves in isolation. In this way, it can effectively alleviate the mutual exchange between the principal and the agent.

2.3. Credit Rationing Theory. Under normal circumstances, banks will increase their earnings when their interest rates

increase, but if the interest rate is higher than a certain level, it will often make those borrowers with good credit standing no longer borrow, and those high-risk borrowers will continue to borrow from the bank. Therefore, the continuous increase in bank interest, the corresponding bank lending benefit has also been improved. Generally, citizens with good credit ratings can maintain a relatively stable level of credit. Banks can provide better services for this type of people. Once the number of borrowers with poor credit continues to rise, it will lead to a decline in the repayment rate and the bank's profits. Therefore, in an incomplete credit market, banks and other financial institutions are more willing to lend to large enterprises with good credit, while rationing credit to small and medium-sized enterprises.

The information asymmetry between financial institutions and small and medium-sized enterprises show the credit rationing of small and medium-sized enterprises be effectively relieved. Under the current situation, we can start from the perspective of the supply chain to establish a more extensive and stable reputation supply chain for large, medium and small enterprises in the supply chain to carry out a symbiotic strategic alliance.

2.4. Analysis of Risk Factors of Order Financing. The core enterprise can be said to be a more specific influencing factor in the risk evaluation of the order financing business. The reason is that the order financing is a systematic arrangement between the bank and the core enterprise to provide financial service solutions to the members of the supply chain, that is, the financing. The risk assessment of order financing business is very necessary. For core companies, there are many factors that affect their risk assessment results. Generally speaking, order financing is an important way for banks and core enterprises to provide financial security for supply chain members. An important channel for enterprises to obtain financing is the bank. Corporate credit is often manifested in a variety of ways. The credit of enterprises often embeds the credit of core enterprises in various ways into the function of credit risk evaluation. This is the credit bundling of financing enterprises with their

downstream core enterprises. With the help of the commercial payment strength and credit of core enterprises, banks can make order financing of small and medium-sized enterprises more smoothly. Not only that, but core companies rely on their status and influence to derive the role of a centralized information platform. It can provide banks with preliminary screening opinions on the credit access of their upstream financing enterprises and can provide banks with rich credit warning information.

However, if the core enterprise has moral hazard, or its accumulated contingent debts due to credit bundling exceed its limit, which affects the normal recovery of the financing enterprise's order payment, the basis of the abovementioned bundled risk control model will no longer exist. The specific factors that the core company has to control risk will be transformed into the entire order financing. The "embroil" of capital risk will cause order financing to collapse thousands of miles away. Therefore, downstream core enterprises are also another important focus of logistics enterprises and banks, and the creditworthiness of core enterprises is considered and reviewed more carefully.

Rather than just relying on small and medium private guarantee institutions or financial institutions and mortgage institutions established in the past, so as to improve the credibility of small and medium enterprises and gradually reduce credit barriers. At present, the fast-developing financial supply chain model represented by order financing provides a good operating platform for the establishment of a sound reputation chain between enterprises. Through the development of supply chain, financial services such as order financing, core enterprises and small and medium-sized enterprises jointly build a reputation chain. Under this operation mode, all node enterprises in the chain will increase their "marginal reputation", thereby Enhance the status of small and medium-sized financing enterprises in the credit market. At the same time, this model also provides a good way for financial institutions to resolve financing risks, and is of great significance to the development of supply chain financial services in Figure 3.

3. Construction of the Index System of Order Financing Risk Evaluation

3.1. Preliminary Establishment of Risk Evaluation Index for Order Financing. In order to reduce the many risks that banks face when they jointly carry out order financing with logistics companies and ensure the smooth development of the business, the bank needs a complete order financing risk evaluation index system to detect and evaluate the risk status of the business. The evaluation index must be able accurately reflect some of the existing wind of the project. In general, banks and logistics companies face more risks when jointly carrying out order financing. The existing bank risk management and control institutions need to reduce the risk level of this type in a reasonable way to ensure the smooth development of business. Specifically, the bank needs a complete set of order financing risk assessment index system to assess the possible risk level of future business development. The evaluation indicators must be able to accurately

reflect the current operation level of the project and possible future development trends. This evaluation index system is more feasible if it is dangerous and easy to operate. This kind of evaluation index system is more feasible if it is dangerous and easy to operate.

Since the current research on the risk evaluation of order financing has just started, a complete knowledge evaluation system has not yet formed. At the same time, there are few academic articles about the risk of order financing in foreign countries for reference, while the domestic research on the risk of order financing Only a handful of documents have been retrieved, and even fewer are used to identify risk factors for order financing. Therefore, in the research process of this article, there is no relatively complete risk indicator system for reference. The risk evaluation system for order financing is the core evaluation system, which determines the effectiveness and reliability of the evaluation results in Table 1.

The index system questionnaire developed by this research verified in the overall validity. In addition to the generation of indicators at all levels, the model supported by the content validity of domestic and foreign literature and related scholars. In the process of designing the questionnaire, the topic design directed to logistics and supply chain management, respectively. Experts and scholars in the financial field conduct expert validity review on the connotation and semantic clarity of the questionnaire items further modify the evaluation indicators. Therefore, the questionnaire used in this study has a high validity.

3.2. Basic Ideas and Algorithms of Supply Chain Model.

The basic idea of the logistic regression model is that the learning process includes two parts: the forward propagation of the signal and the backward propagation of the error. In the process of forward propagation of the network signal, which the sample data of the input layer processed by each hidden layer, including the work of changing the weight. The model further transmits the data to the output layer. If the data signal arriving at the output layer is inconsistent with the original expected output value and does not meet the initial error accuracy requirements, the model error back propagation process begins.

At this stage, the output layer feeds back specific errors to the base layer through each hidden layer. By letting the neurons in the hidden layer identify and process the existing error results. The neurons in each layer can obtain the error signal and adjust accordingly. The weight of each neuron can also be adjusted as the error signal changes. Through such forward and reverse iterative propagation, on the one hand, the neuron weights of the entire model can be adjusted in an orderly manner, thereby ensuring that the final network error is reduced to the initially set accuracy requirements. In order to achieve better learning and training of the entire network. Through such forward and reverse mutual iterative propagation, the weight of the neuron is continuously adjusted until the final network error is reduced to the initially set accuracy requirement or the number of learning times, so as to achieve a better learning and training of the entire

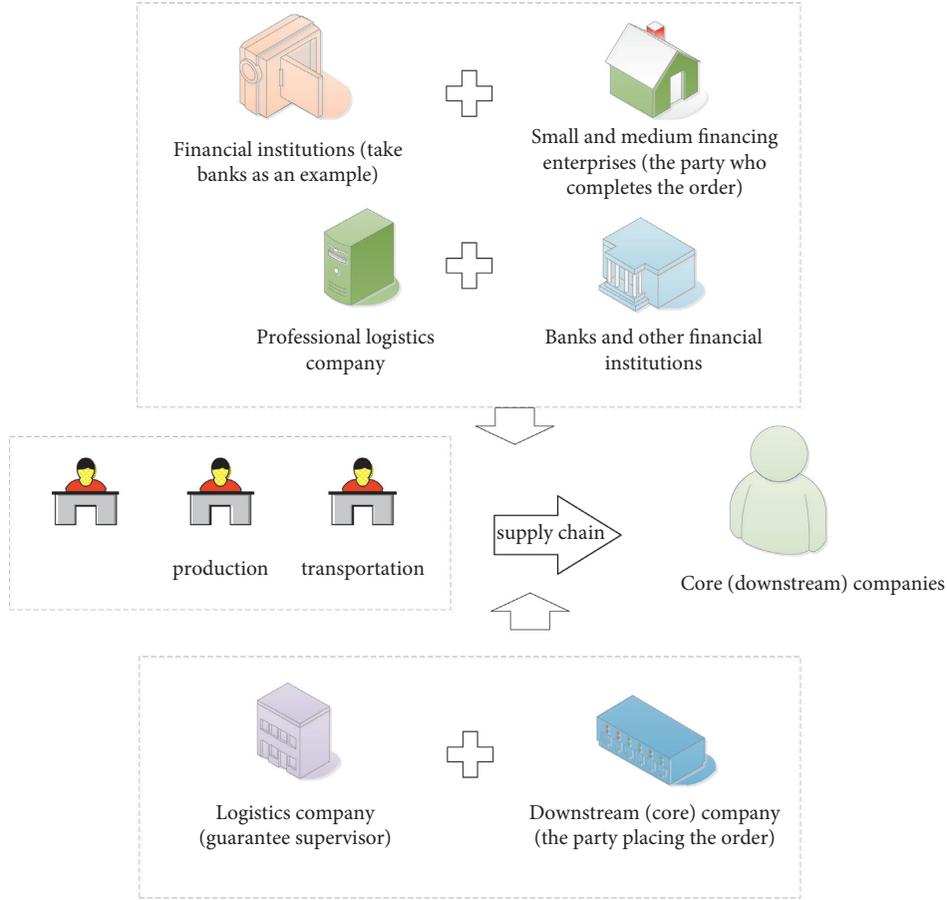


FIGURE 3: Risk control chart of order financing business.

TABLE 1: Preliminary indicators for order financing risk evaluation.

Target layer	Index layer
Financing corporate credit risk	Basic qualities of financing enterprises
	Competitiveness of financing companies
	Reliability of the order
	Order concentration
	Order fulfillment rate
Core (downstream) corporate credit risk	Industry influence
	Credit rating
	Operational capabilities of core enterprises
	Debt solvency of core enterprises
Logistics enterprise supervision risk	The basic qualities of logistics enterprises
	Stability of the organizational structure
	The monitoring level of logistics enterprises
	The soundness of the regulatory system
External environmental risks	Industry outlook forecast
	Market changes

network. Effect. The relationship between input and output of logistic regression is a “multiple input-multiple output” and highly nonlinear mapping relationship. Because it is

difficult to write its expression completely under normal circumstances, it is a “black box” or “grey box.”

The expression of the most commonly used function is

$$\begin{aligned}
 Z^{l+1}(i, j) &= [Z^l \otimes w^{l+1}](i, j) + b \\
 &= \sum_{k=1}^{K_i} \sum_{x=1}^f \sum_{y=1}^f [Z_k^l(s_0 i + x, s_0 j + y) w_k^{l+1}(x, y)] + b, \\
 A_k^l(i, j) &= \left[\sum_{x=1}^f \sum_{y=1}^f [A_k^l(i, j) (s_0 i + x, s_0 j + y)^p] \right]^{1/p}, \\
 \theta &= \theta - \eta \cdot \nabla_{\theta} J(\theta).
 \end{aligned} \tag{1}$$

The following related processes can implement this BP algorithm well.

- (1) Construct the initial logistic regression network structure model, including the network level and the number of nodes in each layer, and set the corresponding learning parameters.
- (2) According to the designed learning and training mode, select the corresponding data as the initial sample for network learning and training, and then let the logistic regression network perform learning

and training until the initial accuracy requirements and the number of learning steps are reached.

- (3) In the process of forward propagation of the signal on the network, by comparing the output of the network with the expected output, if the error does not reach the initial set error level, the network will carry out the reverse propagation of the error, otherwise, the first jump two steps.
- (4) The error back propagation process of BP neural network. In summary, as an effective algorithm, the BP algorithm transforms the sample input and output problems into nonlinear optimization problems, and uses the gradient descent method to solve the weights with iterative calculations to obtain solutions that are more accurate. It said that a neural network is a nonlinear mapping from input to output.

$$\begin{aligned} \theta &= \theta - \eta \cdot \nabla_{\theta} J(\theta), \\ \theta &= \theta - \eta \cdot \nabla_{\theta} J(\theta; x^{(i)}; y^{(i)}), \\ g &\leftarrow \nabla_{\theta} J(\theta). \end{aligned} \tag{2}$$

In the network learning process, the error calculations of the output layer and the hidden layer are different. When Op_j represents the output of the output layer unit, the error is

$$\begin{aligned} r &\leftarrow r + g^2, \\ \Delta\theta &\leftarrow \frac{\delta}{\sqrt{r + \epsilon}} \cdot g. \end{aligned} \tag{3}$$

When Op_j represents the output of the hidden layer, its error is

$$\begin{aligned} \arg \min & \quad \frac{1}{2} \|\omega\|^2 + \lambda \sum_{i>j} \xi_{ij} \\ \text{s.t.} & \quad \omega^T(d_i - d_j) \geq 1 - \xi_{ij}, \quad \xi_{ij} \geq 0, \end{aligned} \tag{4}$$

where k represents the unit of the upper layer connected to the output of unit j , namely,

$$\begin{aligned} RR &= \exp(\beta x), \\ ER &= (RR - 1) * 100, \\ ER(95\%CI) &= [\exp[(\beta \pm 1.96se)x] - 1] * 100. \end{aligned} \tag{5}$$

In the existing evaluation research on business risks related to supply chain finance, there are few quantitative evaluation methods. Some scholars have adopted analytical hierarchy process (AHP), fuzzy comprehensive evaluation method, and other methods for research, and have achieved certain results. However, because these methods lack the ability of self-learning, it is necessary to determine the weights through expert scoring methods, resulting in subjective and arbitrary evaluation results, which cannot well meet the needs of risk evaluation. The characteristics of

logistic regression network methods make up for these shortcomings which is more in line with the needs of order financing risk evaluation.

The evaluation of order financing risk is a comprehensive evaluation process of multi-objective decision-making. The influence of various factors such as enterprise strength, cooperation between enterprises and external environment on the risk of order financing determines that the evaluation index system should include both quantitative and qualitative indicators. Therefore, the evaluation of order financing risk must be indispensable.

The qualitative evaluation of relevant experts and the logistic regression network can determine the specific composition of the network model through the study and training of sample data, and use the optimal algorithm criteria to carry out corresponding iterative calculations, thereby continuously adjusting the network structure and improving the level of the network. In addition, the number of nodes in each layer finalized, so that the entire network model can reach a stable and effective state. In this complex process, the logistic regression network fully reflects the expert's experience and qualitative evaluation simulation with the help of the weights and thresholds in the model.

4. Analysis of Order Financing Risk Evaluation Model Based on Logistic Regression Model

The selection of learning rate in the logistic regression network is particularly important, because it has a greater impact on the weight and threshold changes obtained in the process of network learning and training. This is also a difficult point in the process of selecting neural network parameters. If the learning rate is set too large, although the convergence is faster and the training time is short, it will often make the system unstable and difficult to achieve the desired effect; if the learning rate is set too small, it will usually lead to too long learning and training time. The network convergence is too slow, but despite this, a small learning rate will ensure that the network error value does not easily exceed the error range. Research has found that the selection range of the learning rate is generally between 0.01–0.8. Under normal circumstances, in order to ensure the stability of the network system, more will choose a smaller learning rate instead of a larger learning rate. According to the empirical method, the learning rate selected by the logistic regression network model in this paper is 0.5.

4.1. Selection of Network Learning Parameters. Due to the differentiability of the sigmoid function, its simple differential formula, and easy to express, at the same time it has a good nonlinear mapping ability, so in the research of this article, the logarithmic sigmoid excitation function is used. Since the entire evaluation system is nonlinear, in the entire learning and training process of the network, whether the final learning can achieve convergence, achieve a local minimum, and achieve a better training time effect, etc., the selection of the initial value of the network is very important.

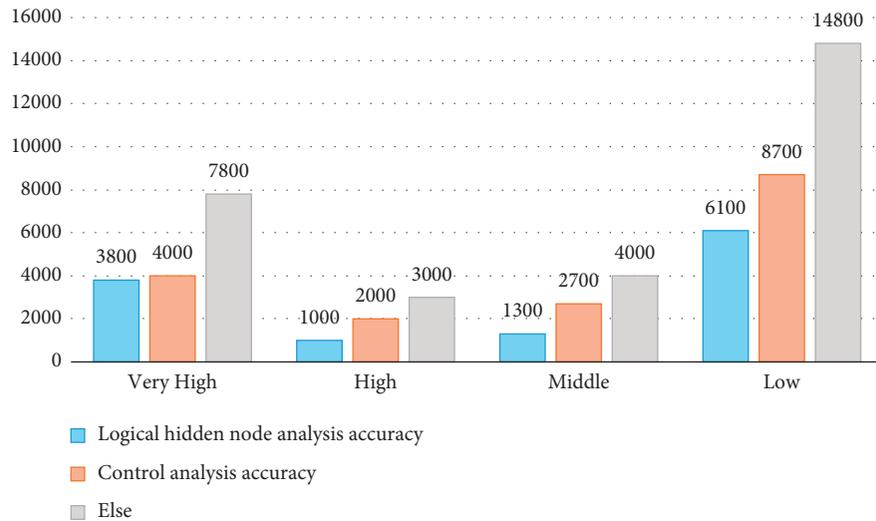


FIGURE 4: Comparative analysis of the accuracy of logical hidden node analysis.

Because the whole evaluation system is nonlinear. In this paper, the evaluation model will be trained and learned in the network. The learning effect of the model depends on the number of repeated learning. Whether the final learning effect can reach convergence, reach a local minimum, and achieve a better training time is an important criterion for testing the effect. Therefore, the value system setting of the evaluation network for the initial selection of the model is very important. In general, after the initial weighting of each neuron, its output value is preferably zero or close to zero, so that the weight of each neuron fully adjusted in the sigmoid function. If the weight is too large, it may cause the network adjustment process to stop. Therefore, at this time, the initial weight is generally set between zero and one. According to previous research experience, this paper sets the initial weight to zero. The result shown in the Figure 4.

In the design of the learning and training process of the logistic regression network, the setting of the network training error accuracy value is more important. Its setting is not random, but the final more appropriate error value should be determined according to the comparative training of the network. If the initially set expected error accuracy is small, you need to extend the training time and increase the corresponding. The model analyzes the number of hidden layer nodes. The model can determine a more suitable expected value by the number of hidden layer nodes. Therefore, what kind of network to use or what kind of error accuracy predicted. In practical applications, you can use mature neural network software such as MATLAB to train multiple networks with different expected error accuracy, and then integrate other factors to determine the result.

4.2. Analysis Results of Model Experiment Control Group. Experiment 1, Experiment 2, Experiment 3 and Experiment 4 compare and analyze the fitting results of different models. This paper selects eight order-financing projects jointly carried out by Bank G and Y logistics enterprise, and J Bank

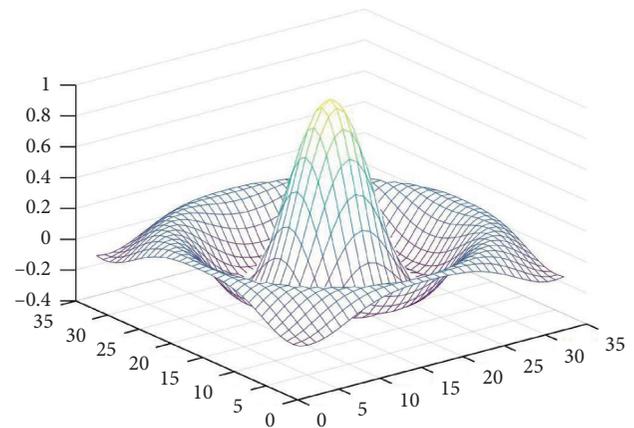


FIGURE 5: The conclusion expression of logistic regression analysis model 1.

and C logistics enterprise in recent years as the research objects of empirical analysis. All the data in this article comes from banks and logistics companies, as well as the real situation of financing companies and downstream core companies involved in the order-financing project. In order to protect trade secrets, this article has performed certain processing on actual data in Figures 5 and 6.

Therefore, this paper conducts application analysis through model analysis. Specifically, this paper uses a logistic regression network to assess the financing risk of an established order. The effect of this risk assessment model is better. Secondly, this paper adopts the order financing risk assessment model based on logistic regression network, which has been trained and tested in practical operation. In addition, in the practical application of the evaluation model, according to the changes of various internal and external factors, financial institutions such as banks make appropriate adjustments in the enterprise supply chain financing system. This paper-trains the evaluation model by adding new learning samples in real time, so that the model can continuously adapt to dynamic changes. The results of

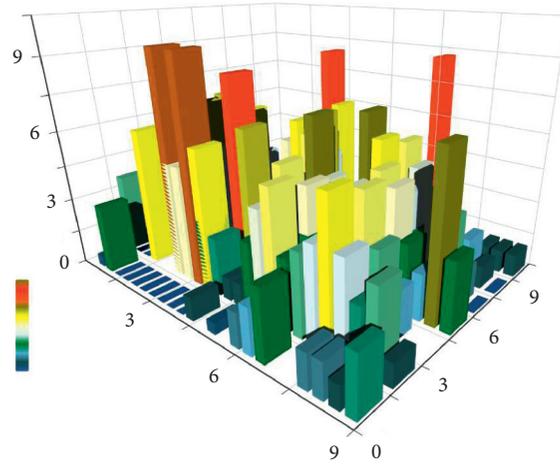


FIGURE 6: The conclusion expression of logistic regression analysis model 2.

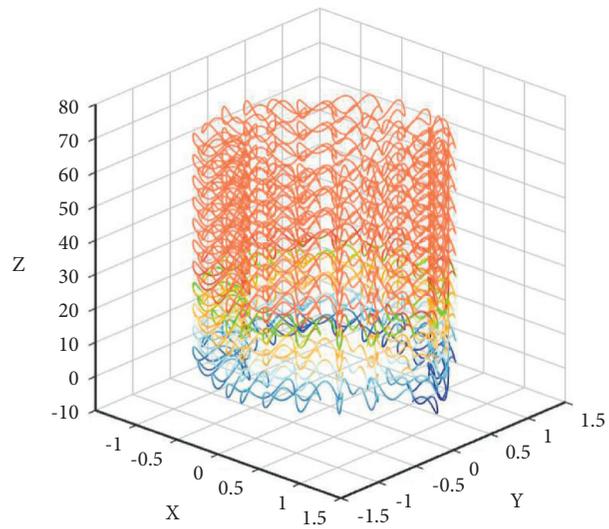


FIGURE 7: The conclusion expression of logistic regression analysis model 3.

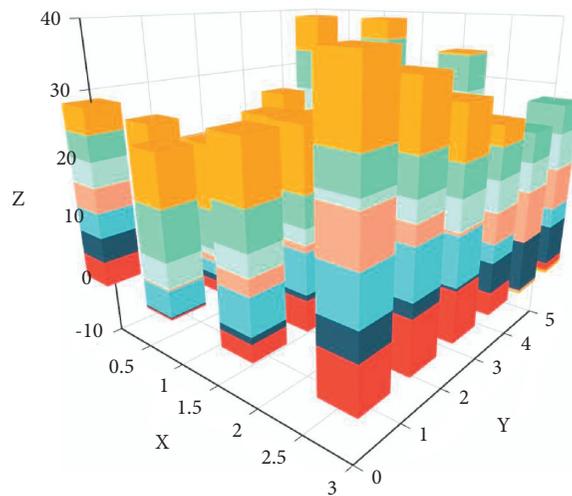


FIGURE 8: The conclusion expression of logistic regression analysis model 4.

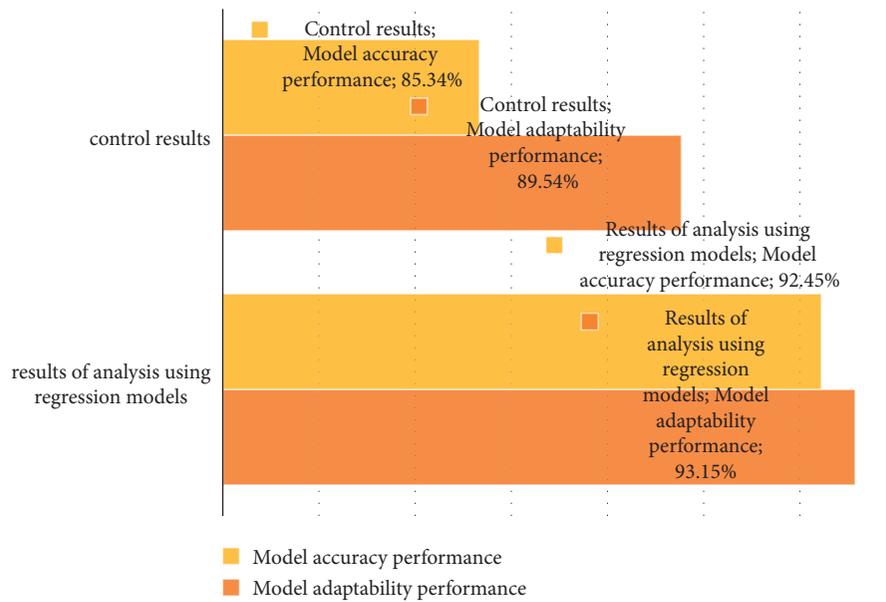


FIGURE 9: Comparison of conclusions of different logistic models.

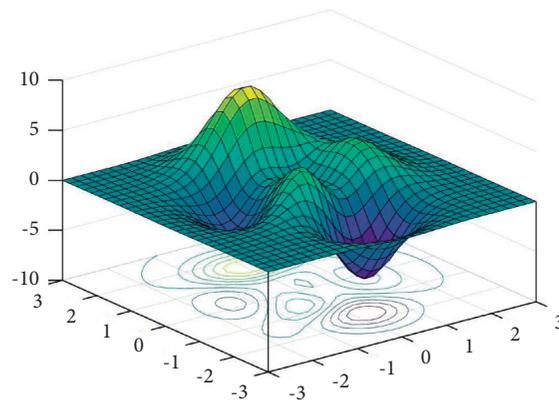


FIGURE 10: Experimental comparison results using different logistical networks.

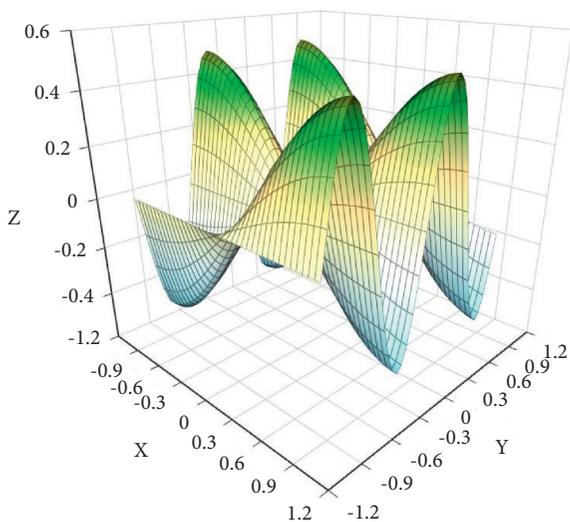


FIGURE 11: Result statistics of multimodal music emotion recognition experiment 4.

the analysis can help the acting supervisor better identify and avoid risks, so that the project carried out safely and effectively in Figure 7.

Model 3 analysis results show that. The model evaluates the risk of order financing business, and the ultimate goal is to identify, avoid and control risks. Model research and evaluation on the risk of order financing business. This paper takes the first six groups of index values after normalization as input, and the corresponding expert's actual comprehensive evaluation results as expected output. The model uses the last two groups as the test data sets of the network, that is, the objects to be evaluated and tested. In the model, the training error accuracy is set to 0.0001, the maximum number of training times is set to 1000, the learning rate is set to 0.5, and $net = \text{train}(net, P, T)$ is used to train the logistic regression model in Figures 8 and 9.

We take the normalized index value data of the first and second groups and its corresponding risk level matrix as the input and expected output of the model test, and use $a = \text{sim}(net_P)$ to simulate the logistic regression network, and

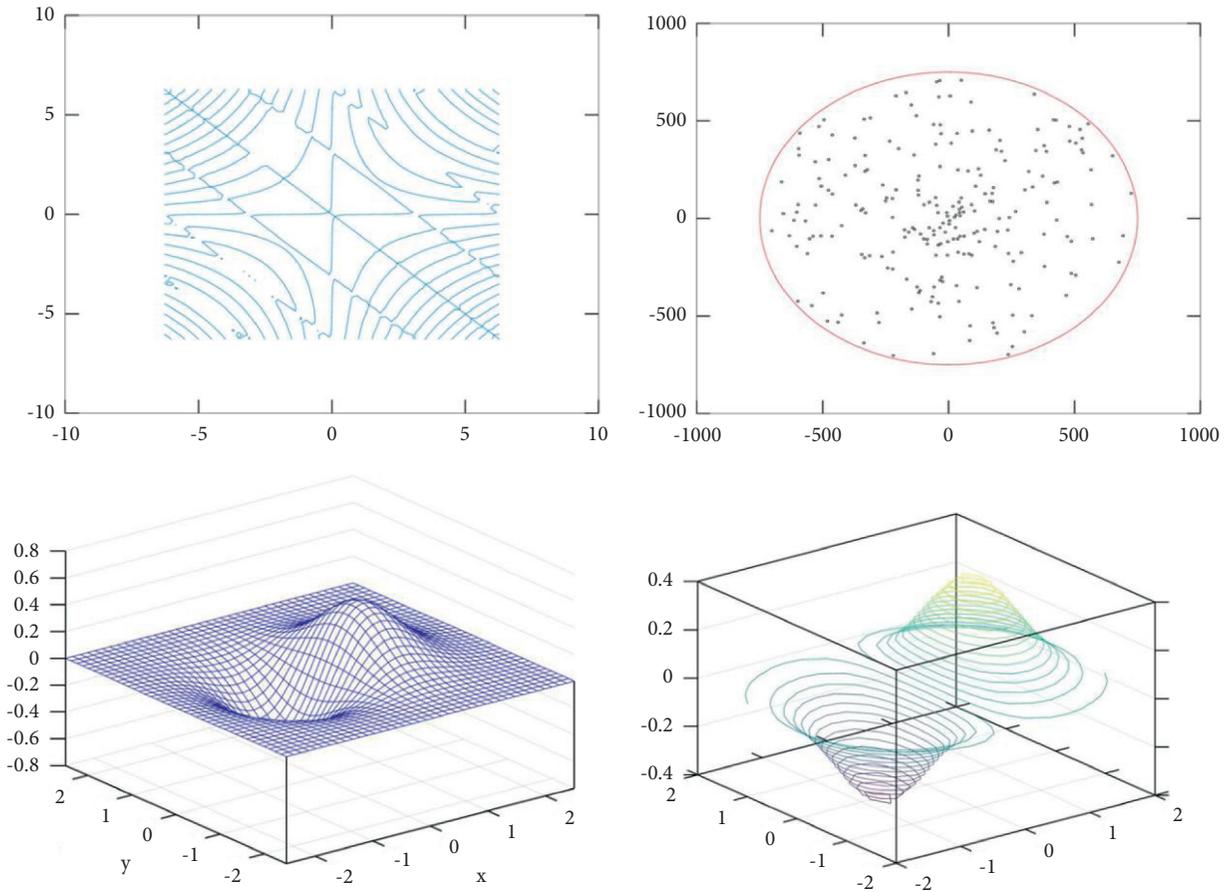


FIGURE 12: Comparison of the results of different test models selected in this article.

finally test. The result is shown in the figure below. It can be seen from the simulation experiment results that the risk evaluation results of these two order-financing projects are consistent with the expected results in Figures 10 and 11.

5. Conclusion

This article evaluates the risk of order financing business, the ultimate goal is to identify, avoid, and control risks. The model passes the above research and evaluation on the risk of order financing business. Based on the status of China's order financing business, this article puts forward several suggestions on risk prevention and control from the perspective of banks, hoping that the Bank of China's risk prevention in order financing business can be helpful.

5.1. Strengthen the Monitoring of the Order Process of Financing Enterprises. In the order financing business, the bank's partners and regulators are quite strong, with good business reputation and relevant technical capabilities. However, as a guarantor, logistics companies need to have a strong sense of responsibility, cooperate more actively with banks, and continuously improve their monitoring capabilities with the expected results in Figure 12. Logistics enterprises should have a complete warehouse management

system. Enterprises need standardized warehouse management system and internal control system. Such a system is conducive to the smooth operation of enterprises. Such a system requires a relatively complete training system. Warehouse managers must have extensive professional experience. The enterprise has the ability to distinguish the specification, quality and grade of the goods of the financing enterprise under supervision. In addition, logistics enterprises should also improve commodity inspection and laboratory testing capabilities. Enterprises need to have detection technology and equipment or related channels. In addition, logistics companies should also improve commodity inspection, laboratory testing, testing technology and equipment or related channels. Logistics companies should strengthen their software and hardware facilities, including the construction of information systems and network security.

5.2. Enterprises Need to Communicate with Banks in a Timely Manner. Monitoring the order completion process of financing enterprises is the focus of banks and logistics enterprises to control risks. Financing companies hand over the purchased raw materials to thirdparty logistics companies for storage and supervision, and the logistics companies assist in a full range of logistics services and final product distribution. This article believes that

logistics companies integrated into the order fulfillment process of financing companies to help financing companies relieve capital pressure and reduce the risk of their order fulfillment process. The logistics enterprises identified in this paper adopt different response modes for different financing orders. The existence of financing companies is conducive to alleviating the financial pressure of enterprises and reducing the risks that may exist in the process of order fulfillment. In the process of fulfilling specific enterprise orders, logistics enterprises need to fully consider the actual financing needs, and provide targeted financing plans. In these processes, logistics companies should standardize the registration system for the use of raw materials required by financing companies. Furthermore, the quantity received, the number of raw materials, the recipient, the time of receipt, the approver, and the issuer must be registered in accordance with the regulations. In the capital flow business, the enterprise should also contact the bank in a timely manner in accordance with relevant business requirements to obtain confirmation and permission from the bank. At the same time, the products produced by the financing enterprise delivered to the logistics enterprise for storage, and the product storage registration completed. Logistics companies can also collect market information and use statistical data to understand the product market capacity and other related conditions to perform detailed management of products.

5.3. Pay Attention to the Audit of Core Enterprises. When a bank conducts order financing with a logistics company, it needs to review the credit status of the downstream core company that issued the order. Banks need to conduct detailed investigations and credit confirmation of these companies. In this process, banks and logistics companies should comprehensively consider the industry category of the core enterprise, the industry status and credit status of the core enterprise. Banks need to assess the credit history of companies and the institutionalized credit bundling strength between different financing companies. Banks control risk in these ways. Banks can also inspect the strictness and implementation of the entry, exit, reward and punishment systems of supply chain enterprises.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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