Credit and Financial Risk Measurement of Financial Enterprises Based on PSM Model

Yijun Chen[1,3], Yan Xiao[1,2]* , Qiuhong Jia[2]

[1]School of Business, Macau University of Science and Technology, Macao, China

[2]College of mechanical engineering, Chongqing University of Technology, Chongqing,China

[3]College of Finance, Guizhou University of Commerce, Guiyang, China

Corresponding author: Yan Xiao (e-mail: yxiao80@163.com, 7533036@qq.com).

Abstract: With the rapid development of social economy and information technology, the credit risk and financial risk of my country's financial enterprises are also facing severe challenges. In financial enterprises, credit is related to the survival of the enterprise. As the business volume and scale of financial enterprises continue to expand, financial risks are correspondingly increased. Therefore, the research on financial enterprise credit and financial risks is of great significance. The research on the credit and financial risks of financial enterprises is helpful to help financial enterprises handle financial risks well and perform evasive operations on them. In addition, it can also enhance the credit awareness of enterprises and reduce the default rate in the financial industry. This paper studies and analyzes the financial enterprise credit and financial risk measurement based on the PSM model. First, it uses the literature method to study the PSM model, corporate credit, financial risk and other theoretical knowledge, and then establish a fuzzy neural network model for risk assessment. And the establishment of a PSM model to conduct a questionnaire survey experiment design, analyze the price sensitivity changes and acceptable price ranges under the PSM model, and get the optimal pricing of new financial products issued by financial companies. Finally, it analyzes the relationship between the default rate of corporate credit and internal finance. The conclusion is that when this financial product is priced at 45 yuan, the proportion of reserved recipients is the largest, reaching 66%; when the price is 75 yuan, the acceptable proportion is 23%, which is the acceptable number of people in the three price ranges. The proportion is the largest; if the price is 100 yuan, the unacceptable proportion is the largest, reaching 45%. This shows that the pricing of a new financial product is directly related to its sales. The reasonableness of the product pricing directly determines whether people are willing to pay for it and accept it.

Keywords: PSM Model, Financial Enterprise Credit, Financial Risk, Neural Networks

1.Introduction

My country's financial industry has developed relatively late, but the speed of development has exceeded that of most countries. With the popularity of the financial industry, more and more financial companies have also increased, and the volume of financial-related businesses has also grown rapidly. Every business volume occurs. It may imply financial risks, which means that financial enterprises should pay more attention to the management and research of financial risks. At the same time, in our country, the operation of enterprises cannot do without loans. Both commercial loans and bank loans need the support of credit. Enterprise credit is extremely important. Therefore, this article conducts research on financial enterprise credit and financial risk measurement, hoping to help financial enterprises improve their creditability and manage financial risks.

The BSM model is also called the price sensitivity test. It can measure customer satisfaction and acceptance of different prices, understand the appropriate product prices that customers consider acceptable, and provide pricing strategies and market share for a certain brand or financial product. The characteristic of this model is the study of a single product and does not include any information about competing products. It is different from the analysis technique used in the GABOR GRANGER model, so it is more suitable for the study of this article.

Preventing and controlling risks is the eternal theme of financial institutions. Although the emergence of supply chain finance can improve the financing capabilities of SMEs and reduce the financial risks of financial institutions to a certain extent, with the development of smart cities and smart finance, the financial risks of SMEs have become more complex, contagious, and latent. , It is difficult to accurately identify and measure. Facing this situation, financial institutions are required to understand and evaluate the financial risks of small and medium-sized enterprises from a new perspective. Therefore, on the basis of studying the financial risk assessment of small and medium-sized enterprises under smart cities and smart finance, he innovatively constructed a supply chain financial risk evaluation index system based on the improved hesitant fuzzy language PROMETHEE method, and verified the effectiveness of the model through examples. To a certain extent, the SME financing evaluation model and the improved PROMETHEE method can help financial institutions reduce risks. However, there is still a certain gap between the effective risk avoidance of financial enterprises [1]. Saito K studies whether there is adverse selection and moral hazard in the credit guarantee system of Japanese SMEs. Since credit guarantee companies cannot distinguish between low-risk borrowers and high-risk borrowers, credit guarantee programs usually attract a larger proportion of risky borrowers, leading to inefficient resource allocation. Using bank-level data, they analyzed whether the default rate is positively correlated with the ratio of guaranteed loans to total loans, and found that the data meets the assumptions of adverse selection and moral hazard. Further analysis shows that the relationship between 100% coverage rate is stronger than 80% coverage rate, which shows that the "20% self-pay" requirement alleviates this problem to a certain extent, but is not enough to completely eliminate it [2]. Amin M A M's research on financial risks and financial performance of banks is very limited, especially in Tanzania. His research aims to explore the simultaneous impact of financial risks and financial performance of Tanzanian commercial banks. The financial performance considered is the return on assets and the return on equity, and the financial risk is the average value of the financial risk. The simultaneous regression equation of two fixed variables is studied by the least square method. Using the unbalanced panel data of 21 banks from 2003 to 2012, the research results show that applying ROA and ROE in the

performance equation at the same time has significant financial risks. In addition, considering that the financial performance in the risk equation is endogenous, ROA and ROE are both significant. This result shows that there is an unavoidable reverse relationship between financial risk and performance. Therefore, commercial banks and banking supervisors should balance risk and performance [3].

The innovations of this article are: (1) Combining qualitative research with quantitative research, fully combining research data with practical application value, and showing the practical value of this research; (2) Combining theoretical research with empirical research, in the BSM model On the basis of theoretical knowledge, combined with the actual situation in financial enterprises to conduct empirical investigation.

2. Method of Financial Enterprise Credit and Financial Risk Measurement Based on PSM Model

2.1 Corporate Credit

Corporate credit refers to a third-party credit rating agency that collects information from other parties and evaluates the company's reliability in compliance with the credit rating rules of the credit rating agency [4]. The credit of financial enterprises refers to the credit of commercial banks or other financial institutions to operators or consumers. In the process of selling credit products, banks and other financial institutions provide financial support to the buyer to help the seller expand sales [5]. Commercial banks and other financial institutions provide corporate credit in the form of currency, and loans and repayments are based on corporate credit. Commercial banks require pledges or mortgages as guarantees for companies that do not meet credit standards, or guarantee companies provide guarantees for these companies [6].

As a complete system of corporate credit rating, the credit rating must include the elements and indicators of the credit rating, the rating and benchmark of the credit rating, and the method and model of the credit rating [7]. Among them. The core content is the credit rating method and model, and it is most closely related to the credit rating.

It needs to have the characteristics of completeness, subjectivity, complexity, information, simplicity, comparability, a wide range of service targets, completeness, fairness, supervision, image, and the foundation of social credit [8-9]. The following methods can be used for credit rating, discriminant analysis method, comprehensive evaluation method, artificial neural network method, and fuzzy analysis method [10]. Carrying out a corporate credit rating can identify the overall quality, elite management, financial status, and debt solvency of the company and conduct a comprehensive inspection.

2.2 Financial Risk

The financial risk of an enterprise refers to the uncertainty of the financial situation caused by various factors that are difficult to predict and control [11]. Due to various financial activities, enterprises suffer losses. It can be divided into investment risk and liquidity risk, credit risk and financing risk. According to the degree of control, it can be divided into controllable risks and uncontrollable risks [12].

In the course of business operations, companies often encounter difficulties, that is, should they continue to explore the market or should carry out risk control issues, which requires the management and control of financial risks through the company's financial statements. The formation of financial risk needs to be divided into external factors and internal factors. External factors include the impact of the macroeconomic environment and policies, as well as the industry background [13]. If the macro economy is not optimistic, fiscal risks may arise. With the adjustment of national economic policies, companies may pay excessive interest or fail to fulfill their debt repayment obligations.

Industry background analysis is a bridge connecting macroeconomic analysis and corporate analysis, and it is also an important part of corporate analysis. The unequal status of each industry in national policies also determines the different characteristics of the development stage and life cycle of the enterprise. Therefore, the investment value and risk are different.

From an objective point of view, the fundamental cause of corporate financial risks is internal, and external causes are only a precondition. Internal reasons include changes in various factors of the company, such as unreasonable capital structure, unreasonable investment decisions, unsound financial management systems, low risk awareness of financial-related personnel, and unscientific benefit distribution policies, including stocks and Capital with a low borrowing ratio is stupid in corporate capital and may easily induce risks caused by irrational corporate capital structure. Investment decisions play an important role in the future development of enterprises. The right investment decision can reduce corporate risks and increase corporate benefits. Wrong investment decisions can lead to tragic business losses. In actual business, corporate financial personnel lack knowledge of risks, lack the ability to respond to financial risks, and lack an objective understanding of financial risks. Insufficient ability of enterprises to deal with emergencies can easily bring financial risks [14-15].

Financial risks exist in the whole process of business operation, such as financing, investment, capital operation links and profit distribution links, which are manifested in different forms in each link [16]. When raising funds, it is necessary to balance risk and cost. If the debt ratio is too large, the higher the debt ratio, the greater the financial risk to the company; in investment, the company's current asset investment is too large, causing the company's turnover. The poor liquidity of enterprises, which in turn causes a series of financial problems; the capital operation link is manifested as a serious inventory backlog; the profit distribution link is manifested as whether the proportion of dividends is reasonable [17].

2.3 Fuzzy Neural Network Model

Risk is a possible existence. It is something that has not directly caused a threat, but it may directly cause serious damage to the company's assets, thereby making the company's operation difficult to maintain. Therefore, factors related to risk include, but are not limited to: asset value, threat level, and related vulnerability, which can be transformed into: $R = V(B, F, U)$, where R is risk, B is asset, F is threat, and U is vulnerability.

Back propagation neural network (BP network) is one of the most mature and widely used artificial neural networks today. That core network is a three-level grid. As input signals, including input layer, hidden layer, and output layer [18], first transmit to hidden nodes, then perform functional operations, deliver the output information of non-display nodes to output nodes, and finally obtain the results of output variables. BP network can arbitrarily execute the composite nonlinear mapping relationship from input to output, has excellent generalization ability, and can complete complex standard recognition tasks [19]. The typical structure of BP network is shown as in Fig. 1.
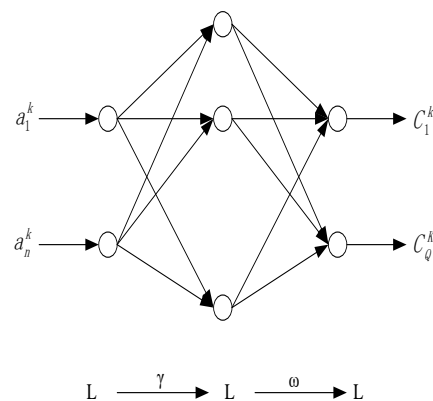

Figure 1. Single hidden layer BP neural network structure

The learning process of the algorithm includes the forward transmission process and the

reverse transmission process [20]. In the previous steps, the input information is processed from the input layer to each layer through the hidden unit and sent to the output layer. The state of neurons in each layer only affects the state of neurons in the next layer. If the target output cannot be reached at the output level, enter the post configuration, return an error signal along the initial connection path, change the weight of each neuron layer, and suppress the error signal to a minimum [21].

The basic calculation steps of the algorithm: The BP algorithm based on the gradient method is learned under the guidance of the teacher and is suitable for multilayer neural networks. Set the number of network layers through Q. The first layer is the input layer, the Qth layer is the output layer, the middle layer is the hidden layer. The connection weight coefficient of the i-th neuron input to the q-th layer is $\omega_{ij}^q (i=1,2,\Lambda, n_q; j=1,2,\Lambda, n_{q-1})$. The input and output conversion ratio of the network is shown below.

$$S_i^{(q)} = \sum_{j=1}^{n_q-1} \omega_{ij}^q x_j^{q-1} - \theta_i^{(q)} (1)$$

$$x_i^{(q)} = f(S_i^{(q)}) = \frac{1}{1+e^{-\mu S_i^{(q)}}} (2)$$

Suppose the input and output samples of a given P group are:

$$x_p^{(0)} = \left[x_{p1}^{(0)}, x_{p2}^{(0)}, \Lambda, x_{pn_1}^{(0)}\right]^T (3)$$

$$d_p = \left[d_{p1}, d_{p2}, \Lambda, d_{pn_q}\right]^T (p=1,2,\Lambda, m)(4)$$

Using this series of samples, BP network is trained first. In other words, learning and adjusting the weight coefficients of network connections enables the network to perform specific input-output mapping. The trained BP network may not provide suitable sample input. This property is called a generalization function. In related applications, BP network has interpolation function. The cost function of fitting error is taken as follows:

$$E_p = \frac{1}{2}\sum_{i=1}^{n_Q}(d_{pi} - x_{pi}^{(Q)})^2 (5)$$

Finally, the learning algorithm of BP network is concluded as follows:

$$\omega_{ij}^{(q)}(k+1) = \omega_{ij}^{(q)}(k) + \alpha D_{ij}^{(q)}(k+1)(6)$$

$$D_{ij}^{(q)} = \sum_{p=1}^{p} \delta_{pi}^{(q)} x_{pj}^{(q)}(7)$$

$$\delta_{pi}^{(q)} = \left(\sum_{k=1}^{q+1} \delta_{pk}^{(q+1)} \omega_{ki}^{(q+1)}\right) \mu x_{pi}^{(q)}(1-x_{pi}^{(q)})(8)$$

$$\delta_{pi}^{(Q)} = (d_{pi} - x_{pi}^{(Q)})\mu x_{pi}^{(Q)}(1-x_{pi}^{(Q)})(9)$$

3. Experiment on Financial Enterprise Credit and Financial Risk Measurement Based on PSM Model

3.1 PSM Model

The PSM model is also a price sensitivity test model. The PSM sensitivity analysis method was proposed by vanwesterndrop in the 1970s. This is the simplest and most practical of many models currently being tested. Almost all market research companies recognize it. The PSM model can not only get the optimal price, but also a reasonable price range [22-23].

The advantage of the PSM model is to set the price from the perspective of the company and from the perspective of the consumer [24]. In other words, this model not only fully considers the subjective requirements of consumers, but also considers the interests of the largest consumer group that companies pursue. Therefore, the PSM model is widely used in price testing in market research. In the price test of new products, the PSM model also occupies an important position. New products can be divided into two categories. One is a new product that has never appeared before, and the other is a new product relative to our company. In other words, this product has never been listed on the market.

Consumers can only accept the concept of products (or services). In order to show the price you think you can pay, there is another new product compared with our company, that is, this product is already on the market. Usually, the price test of the first new product passes the concept test. Only when consumers consider products can they know the price. During the testing of the second new product, the price is usually the same, and the name position is closely related. Only a clear consumer name can clearly indicate the price in the minds of consumers. Therefore, before the PSM model is applied to the price test of the first new product, the product concept must be shown to consumers. Before the PSM model is applied to the second new product to manage prices, consumers must correctly know where the company's products are. This is a prerequisite for the PSM model to be applied to new product testing [25].

Defects of the PSM model: (1) Ignore the actual purchasing power: only consider the proportion of accepting consumers and ignore the purchasing power of consumers. Only focus on the largest number of target groups. In fact, consumers cannot buy even if they think the price is reasonable and limited by factors such as purchasing power. (2) Price cheating. Consumers intentionally or unintentionally increase or decrease the allowable price because of various factors investigated (such as price reductions that increase profits, etc., acceptable personal issues lead to price increases). Because consumers know that products (support or services) in the virtual world do not cost money, the possibility of price reduction is high.

Like the price sensitivity model, the price breaking point model is also an easy-to-use analysis method. But unlike the price sensitivity model, the research question is to ask the questioner about the possibility of buying at a specific price level. The probability of buying in the market is usually expressed on a 5-point scale. A score of 5 means it is very likely, and a score of 1 means it is very unlikely to buy. Respondents are often asked whether they can buy the same product at different prices. In order to avoid possible deviations from orders, the order of appearance of products with different values is completely random. The analytical method of this model is to calculate the proportion of market intentions that are very likely at various price levels. Find the price band by analyzing the demand curve of various price bands. A slight change in prices similar to this will lead to a sharp drop in the desire to buy. After finding the turning point, this price can be used as a market reference price.

3.2 Experimental Design of Financial Enterprise Credit and Financial Risk Measurement Research Based on PSM Model

The main purpose of the PSM model is to make a price gradient table through qualitative investigations, covering all possible price ranges of products. Secondly, in a representative sample, the tester needs to choose 4 options in this price special block list: slightly higher but acceptable price, low but acceptable price, too high to accept, too low to accept . For these options, the probability of upward and downward accumulation can be found, and the cumulative proportion can be used as the price demand elasticity curve.

The first step of the complete process: through quality investigation, a price classification table covering the possible price range of the product is made. For this service, there is usually a specific step and the person receiving the service. The range of values in the evaluation table must cover all possible value points. The price is usually 3 times, or the lowest.

(1) Cheap price: Is the price lower than what is considered a cheap price, and is it definitely available for purchase?

(2) Too cheap price: What price is generally acceptable to everyone, even a price that is not attractive to you?

(3) Expensive price: What kind of price belongs to your category? Do you need to think

about it before you buy it?

(4) Too expensive price: How high is the price, you will definitely give up buying?

Step 2: Questionnaire survey: During the questionnaire survey phase, 250 questionnaires were sent using a combination of online and on-site sending. 217 questionnaires were recovered. After review, the data of 7 invalid questionnaires were deleted. 210 valid questionnaires were recovered, and the recovery rate was 80%. The following is a representative sample. Respondents are asked to select 4 options in this price classification table. Although a bit expensive but acceptable, although a bit low but acceptable. The price is too high to accept. The price is too low to accept.

The third step: draw the percentage curve of these sample data, find the cumulative rate of the upper and lower limits and the intersection of the four prices respectively. Accumulation downward: Respondents who think 10 yuan is cheap will also think 8 yuan is cheap. Respondents who think that 20 yuan is expensive will also think that 25 yuan is expensive.

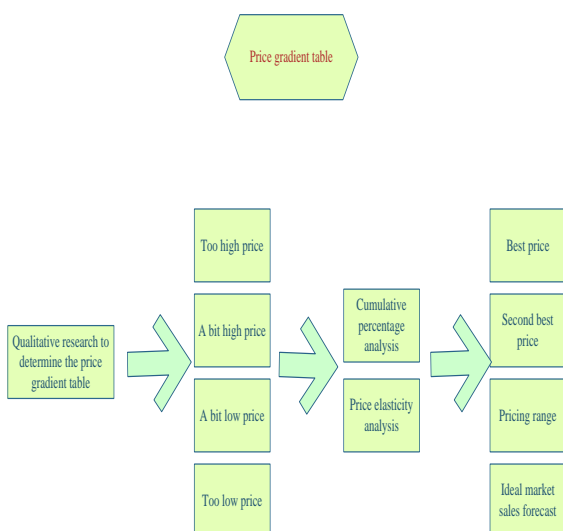Figure 2 shows the price gradient table under the PSM model.

Figure 2. Price gradient table under the PSM model

4. Research and Analysis of Financial Enterprise Credit and Financial Risk Measurement Based on PSM Model

4.1 Price Sensitivity PSM Test

In the development of new financial products, financial companies will conduct price sensitivity tests in order to obtain users' acceptance range of product prices. It does not need to give a good price in advance, but allows each respondent to indicate their acceptable price range. For each price in the specified price range, the tester usually asks four test questions. The respondent needs to select the appropriate price data in the corresponding place in the questionnaire from high to low. The original data of the survey is organized as follows:

Table 1. Raw data of price sensitivity experiment

Price(yuan)	too cheap	Start to feel cheap	Start to feel expensive	Too expensive
0	33	14	0	0
20	3	3	2	2
25	26	12	2	0
30	2	3	7	2
35	11	16	2	2
40	2	2	7	6
45	10	13	2	0
50	3	3	9	4
55	13	16	2	2
60	2	4	14	12
65	2	8	3	2
70	1	0	11	7
75	3	9	3	3
80	1	0	16	17
85	2	4	2	2
90	0	0	6	5
95	0	3	1	2
100	2	5	11	15
105	0	0	18	33

Figure 3. Raw data of price sensitivity experiment

With the introduction of a new financial product, the acceptance of different prices varies. Table 1 shows the original data of the price sensitivity experiment. It can be seen from Table 1 and Figure 3 that when the product was priced at 25 yuan, 26 people thought it was too cheap, indicating that the price was determined to be too low; when the price was 105 yuan, 18 people thought it was a bit expensive , Indicating that the price is too high. It shows that the acceptable price range of the financial product is between 25-105 yuan, and the following experiment will continue to narrow the price range.

45	30	57	17	9
50	21	45	25	12
55	19	43	26	13
60	7	28	39	24
65	6	25	41	25
70	5	18	51	31
75	5	18	53	33
80	3	10	68	49
85	3	10	69	50
90	2	7	74	54
95	2	7	74	54
100	2	5	84	69
105	0	0	100	100

Table 2. PSM model experimental data after summary processing

Price(yuan)	too cheap	Start to feel cheap	Start to feel expensive	Too expensive
0	100	100	0	0
20	69	88	1	2
25	67	86	2	1
30	42	75	9	2
35	41	73	10	4
40	31	58	16	9

Data preprocessing people who think that 20 yuan is too cheap must think that 0 yuan is also too cheap, which is an inclusive relationship. In the same way, people who think 100 yuan is too expensive will also think 105 yuan is too expensive. Based on this, the data is aggregated.

Table 2 shows the experimental data of the PSM model after data aggregation. It can be clearly seen from Table 2 that the price of the financial product exceeded 60 yuan, which made 39 experimenters feel that the price was too high and unacceptable at the beginning. This will undoubtedly reduce the purchase volume of the financial product; in addition, if the price is set at

around 35 yuan, then more than 73 subjects think the price is very cheap, indicating that this price is not suitable for issuance.
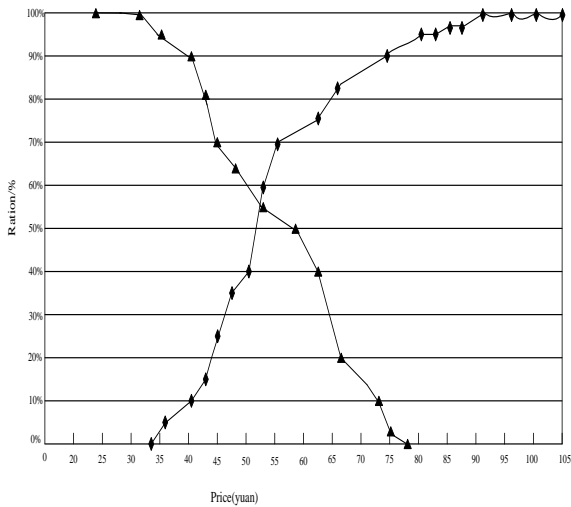

Figure 4. Indifference analysis

In Figure 4, the diamond-shaped line represents expensive, and the triangular-shaped line represents cheap. The two curves in Figure 4 consist of the cumulative number of people who answered the "cheap" and "expensive" questions. The intersection of these two dashed lines is the IDP. The price on the horizontal axis is 0 yuan to 105 yuan, and if you increase the space, it is 5 yuan. The vertical axis of the graph is the cumulative percentage of the selected number of people. IDP points are at the intersection of "cheap" and "beginning to become expensive", about 75 yuan, and the highest purchase rate is about 39%. The point of intersection between people who feel expensive and people who feel cheap is 75 yuan, which can be said to have the

largest number of people at this price. This price is the most appropriate price.

Table 3. Three types of people accept, unacceptable, can keep accepting price statistics table

Price(yuan)	Acceptable price	Unacceptable price	It is difficult to accept the price
0	0	100	0
20	13	69	19
25	14	67	21
30	19	44	39
35	20	44	38
40	29	39	35
45	29	38	36
50	33	32	38
55	34	31	38
60	36	29	37
65	37	29	36
70	34	35	34
75	32	37	34
80	25	51	27
85	24	52	27
90	22	54	26
95	22	55	25
100	14	70	19
105	0	100	0

Figure 5 . Three types of people accept, unacceptable, can keep accepting price statistics

Table 3 and Figure 5 above are graphs of statistical data for these three types of people. From the above data, it can be seen that the price is 60 yuan, and the acceptable number of people reaches 36 people; the price is 100 yuan, and the number of unacceptable people reaches 70 people; the price acceptable to most people can be reserved. Within the range of 30-65 yuan.

Table 4. Proportion of the three types of people on the best price point/no difference point/highest acceptable price point

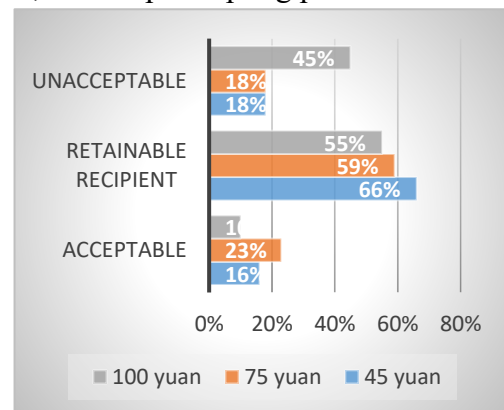|	45 yuan	75 yuan	100 yuan
Acceptable	16%	23%	10%
Retainable recipient	66%	59%	55%
Unacceptable	18%	18%	45%

Figure 6 . Proportion of the three types of people on the best price point/no difference point/highest acceptable price point

It can be seen from Table 4 and Figure 6 that the price is 45 yuan, and the proportion of reserved recipients is the largest, reaching 66%; the price is 75 yuan, and the acceptable proportion is 23%, which is acceptable among the three price ranges The number of people accounted for the largest proportion; if the price was 100 yuan, the unacceptable number accounted for the largest proportion, reaching 45%. This shows that the pricing of a new financial product is directly related to its sales.

The reasonableness of the product pricing directly determines whether people are willing to pay for it and accept it.
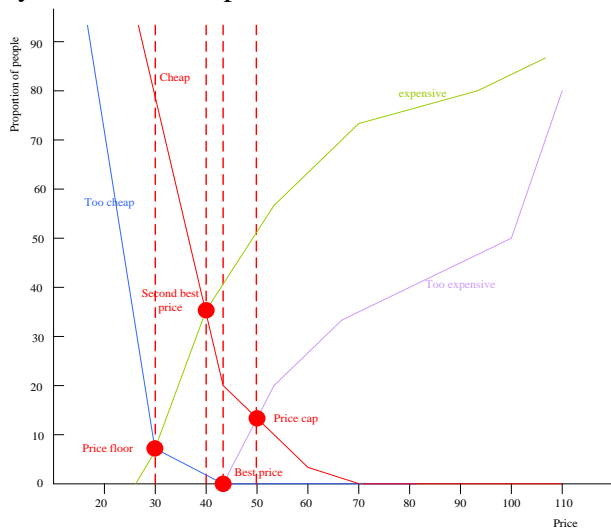

Figure 7. Determine the optimal price of the product according to the BSM model

As shown in Figure 7, the summary statistics of the percentages of the "very cheap" and "cheap" prices are completed, and the four price lines are "very expensive" and "expensive". The intersection of "very cheap" and "very expensive" is the best price. Because in this case, most people do not feel "very expensive" or "very cheap". At this price, most consumers may buy their products. At the same time, the allowable price range is defined by "very cheap" and "very expensive", "cheap" and "very expensive". Therefore, the optimal price should be 45 yuan.

4.2 Financial Risk Measurement Analysis of Financial Enterprises Based on BSM Model

First, perform a single-factor T test for each independent variable, and delete 5 indicators that have nothing to do with dependent variables (residual net asset growth rate RONA, key person title CEO, corporate ownership EO, return on equity ROE, return on total assets ROTA). The correlation between the two main assets shows that the choice of asset returns is highly correlated.

Table 5. Variables in the Equation

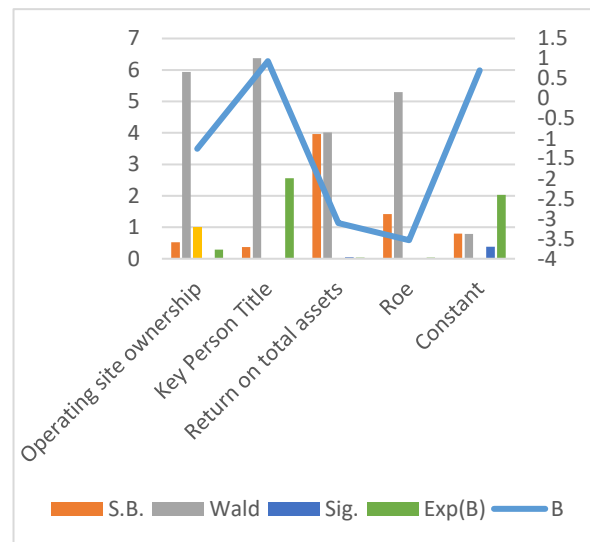|		B	S.B.	Wald	df	Sig.	Exp(B)
Step in	Operating site ownership	-1.257	0.526	5.932	1	0.015	0.286
	Key Person Title	0.934	0.371	6.378	1	0.013	2.556
	Return on total assets	-3.109	3.962	4.012	1	0.047	0.034
	Roe	-3.537	1.420	5.293	1	0.013	0.039
	Constant	0.706	0.798	0.785	1	0.377	2.026

Figure 8 . Variables in the Equation

It can be seen from Table 5 and Figure 8 that p=0.05, all variables in the table are significantly related, and the Logistic equation can be written:

Q=exp(0.816-1.326*EO+0.814*CEO-3.109 *ROTA-3.457*ROE)/[l1+exp(0.816-1.326*EO+ 0.814*CEO-3.109*ROTA-3.457*RONA)。

Among them, the numbers 1.326/0.814/3.109/3.457 are the weight coefficients of various factors. From this equation, it can be clearly seen that the creditworthiness of financial companies is inversely proportional to ROTA, EO, and RONA, and directly proportional to CEO.

Table 6. Medel Summary

Step	-2 Log likelihood	Cox & Smell R Square	Nagelkerke R Square
1	58.236	0.539	0.715

Table 7. Classification Table

	Observed			Predicted		
				Breach of contract		Percentage Correct
				0	1	
Step 1	Breach of contract	0		39	8	83.0
		1		7	40	85.2
	Overall Percentage			-		84.0

It can be known from Table 6 that the value of Log likelihood is 58.236, the value of Cox&Smell R Square is 0.539, and the value of Nagelkerke R Square is calculated comprehensively to be 0.715, which fully shows that the model has a high degree of fit. It can be seen from Table 7 that the percentage of correct judgments obtained from the two types of "0-0" and "0-1" is 83%, and the two types of "1-0" and "1-1" are As a result, the proportion of correct judgments was 85.2%, and the overall proportion reached 84%, which once again illustrates the high degree of fit of the model.

5. Conclusion

This article mainly studies the financial enterprise credit and financial risk measurement analysis based on the BSM model. Through in-depth study of the BSM model, credit risk and financial risk theories, the establishment of a

fuzzy neural network model and BSM model experimental design, and analysis of financial products under the BSM model The optimal price for pricing, and the relationship between the credit default rate and financial risk of financial companies based on the BSM model, it is concluded that the BSM model can help financial companies to price their products, and the company's default rate and total asset return Rate, net asset growth rate, and ownership of the business site are inversely proportional, and proportional to the title of the key person.

The innovations of this article are: first, the combination of qualitative research and quantitative research, fully combining research data with practical application value, to show the practical value of this research; second, the combination of theoretical research and empirical research, in the BSM model On the basis of theoretical knowledge, combined with the actual situation in financial enterprises to conduct empirical investigation. Third, fully integrate the price sensitivity model with the credit and financial risk analysis of financial enterprises to avoid corporate financial risks from an innovative perspective.

There are still shortcomings in this article. First, two prerequisites should be met when using the PSM model to test. One is to fully explain the concept and positioning of the product to the participant, and let him fully understand. The second is to give a reasonable price gradient table; the second is that the test may lie in price, for example, because the subjects deliberately lower the price to benefit, etc.; the third is the defect of the system, which does not fully consider price changes Factors leading to changes in purchase intention.

Reference

[1]Wang K , Yan F , Zhang Y , et al. Supply Chain Financial Risk Evaluation of Small- and Medium-Sized Enterprises under Smart City[J]. Journal of advanced transportation, 2020, 2020(7): 1-14.

[2]Saito K , Tsuruta D . Information asymmetry in small and medium enterprise credit guarantee schemes: evidence from Japan[J]. Applied Economics, 2018, 50(22-24):1-17.

[3]Amin M A M , Sanusi N A , Kusairi S , et al. Inverse

relationship of financial risk and performance in commercial banks in Tanzania[J]. Investment Management and Financial Innovations, 2017, 11(4):279-291.

[4]Ahmadian S , Vahidi B , Jahanipour J , et al. Price restricted optimal bidding model using derated sensitivity factors by considering risk concept[J]. IET Generation Transmission & Distribution, 2016, 10(2):310-324.

[5]Lai L , Binkley J , Jones V , et al. Implementing the Prospective Surveillance Model (PSM) of Rehabilitation for Breast Cancer Patients with 1-Year Postoperative Follow-up, a Prospective, Observational Study[J]. Annals of Surgical Oncology, 2016, 23(10):1-6.

[6]Pham N V , Ma V Q , Tran T T N . Structures and stability of closo-hydroborate dianions BnHn2– (n = 5-12) from the PSM model[J]. Science and Technology Development Journal - Natural Sciences, 2019, 2(4):68-74.

[7]M, A, Dorairangaswamy, et al. Image denoising using Principal Component Analysis (PCA) and Pixel Surge Model (PSM)[J]. International Journal of Signal and Imaging Systems Engineering, 2016, 9(4/5):311-319.

[8]Damasceno-Ferreira José Aurelino, Ruschi B G , Silva C W , et al. The relationship between renal warm ischemia time and glomerular loss. An experimental study in a pig model[J]. Acta Cirurgica Brasileira, 2017, 32(5):334-341.

[9]Chen H , Zhang Z , Cui L , et al. NoPSM: A Concurrent MAC Protocol over Low-Data-Rate Low-Power Wireless Channel without PRR-SINR Model[J]. IEEE Transactions on Mobile Computing, 2017, 16(2):435-452.

[10]Thalfeldt M , Pikas E , Kurnitski J , et al. Window model and 5 year price data sensitivity to cost-effective faade solutions for office buildings in Estonia[J]. Energy, 2017, 135(sep.15):685-697.

[11]Han I . The Effect of Service Quality of Mobile Air Ticketing App on the Price Sensitivity and Purchase Intention; With MOBISQUAL Model[J]. Journal of Tourism Management Research, 2019, 23(6):673-694.

[12]Zhao H , Jin D . 21. A Mathematical Model of Enterprise Credit Venture Evaluation Mechanism based on Entropy Weighting Method[J]. Boletin Tecnico/Technical Bulletin, 2017, 55(9):154-160.

[13]Bouchti A E , Tribis Y , Nahhal T , et al. Forecasting Financial Risk using Quantum Neural Networks[J]. Journal of Information Security Research, 2019, 10(3):97-104.

[14]Franzoni S , Pelizzari C . Rainfall financial risk assessment in the hospitality industry[J]. International Journal of Contemporary Hospitality Management, 2019, 31(3):1104-l121.

[15]Kirac K . Determinants of Financial Risk: An Empirical Application on Low-Cost Carriers[J]. entific Annals of Economics and Business, 2019, 66(3):335-349.

[16]Bouchti A E , Tribis Y , Nahhal T , et al. Forecasting Financial Risk using Quantum Neural Networks[J]. Journal of Information Security Research, 2019, 10(3):97-104.

[17]Franzoni S , Pelizzari C . Rainfall financial risk assessment in the hospitality industry[J]. International Journal of Contemporary Hospitality Management, 2019, 31(3):1104-l121.

[18]Khandker V , Joshi K P . Price determination for 4G service using price sensitivity model in India[J]. Journal of Revenue and Pricing Management, 2019, 18(2):93-99.

[19]Kulhanek L , Sulich A . Financial risk in the contemporary environment of enterprises[J]. Zeszyty Naukowe Wyszej Szkoy Humanitas Zarzdzanie, 2018, 19(2):49-63./

[20]Korol I , Poltorak A . FINANCIAL RISK MANAGEMENT AS A STRATEGIC DIRECTION FOR IMPROVING THE LEVEL OF ECONOMIC SECURITY OF THE STATE[J]. Baltic Journal of Economic Studies, 2018, 4(1):235-241.

[21]Waznah G A , Taufik M S M , Zuraidah M S , et al. Managerial Opportunism: Monitoring Financial Risk of Malaysian Shariah-compliant Companies[J]. Global Journal Al-Thaqafah, 2018, 8(1):99-115.

[22]Kavassalis P , Stieber H , Breymann W , et al. An innovative RegTech approach to financial risk monitoring and supervisory reporting[J]. Journal of Risk Finance, 2018, 19(1):39-55.

[23]Chen W , He L . Cause analysis and management control research on financial risk of university[J]. Journal of Discrete Mathematical Sciences &

Cryptography, 2018, 21(6):1329-1334.

[24]Kavassalis P , Stieber H , Breymann W , et al. An innovative RegTech approach to financial risk monitoring and supervisory reporting[J]. Journal of

Risk Finance, 2018, 19(1):39-55.

[25]Niu S . Prevention and supervision of internet financial risk in the context of big data[J]. Revista de la Facultad de Ingenieria, 2017, 32(11):721-726.