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Retraction

Retracted: The Comprehensive Evaluation Model of Business Performance Based on Artificial Neural Network

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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) Peer-review manipulation

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] L. Wang, F. Chu, and C. Chang, "The Comprehensive Evaluation Model of Business Performance Based on Artificial Neural Network," *Mobile Information Systems*, vol. 2022, Article ID 2573407, 9 pages, 2022.

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Research Article

The Comprehensive Evaluation Model of Business Performance Based on Artificial Neural Network

Lai-Wang Wang,[1] Fu-Lin Chu,[1] and Chien-Hua Chang[2]

[1]*Department of Industrial Engineering and Management, National Kaohsiung University of Science and Technology, Kaohsiung City 807618, Taiwan*
[2]*Department of Tourism and Recreation, Cheng Shiu University, Kaohsiung City 83347, Taiwan*

Correspondence should be addressed to Chien-Hua Chang; k2010@gcloud.csu.edu.tw

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In recent years, domestic enterprises have shown a strong development trend with rapid growth and wide coverage. The construction and operation of enterprise management models are crucial to the development of enterprises, and a good enterprise management model helps enterprises stand firm in market competition and achieve long-term development. Under the background of the new economic normal, the market environment has seen tremendous changes, which have far-reaching effects on the operation and development of enterprises. In order to cope with the impact of the changing economic situation on enterprises, enterprises need to reasonably improve their management models and promote their sustainable and stable development. Through qualitative and quantitative research, scholars have expressed their views on this issue. Combining the existing studies and analyses by scholars at home and abroad, this paper discusses the necessity of the need for innovation in enterprise management in the context of the big data era, discusses the current situation of enterprise management, reveals the problems from both microaspects and macroaspects of enterprises, uses artificial neural networks to establish an enterprise performance assessment model and related policy recommendations, improves the efficiency of enterprises, and puts forward some constructive suggestions for the innovation of enterprise management models.

1. Introduction

Enterprise reform and high-quality development are an important part of China's economic reform and the direction of transformation and development included in the 14th five-year plan of each enterprise, and in this process, how to maximize the role of the baton of business performance assessment is crucial to the promotion of enterprise reform [1, 2]. Business performance assessment is the organic combination of asset supervision and management objectives and reform objectives with the business objectives of the enterprise. Through performance appraisal, the regulatory content is refined and quantified into enterprise management, which is conducive to the implementation of regulatory responsibilities, timely monitoring of business processes, and comprehensive feedback on business results, on the basis of which enterprise management is promoted to institutionalized and market-oriented regulatory changes and better smooth internal management relationships [3].

Business performance appraisal is closely related to enterprise wages and salaries, the process of achieving enterprise reform goals is also the process of achieving enterprise employee performance appraisal goals, and the content of business performance appraisal has an important guiding role in enterprise business development. Business performance appraisal is also a catalyst for the cultivation of corporate culture, and a healthy corporate culture is the soft power and the practice of reform [4]. Corporate culture supports and identifies with the direction of corporate reform, and the employees' political big picture and sense of responsibility will be stimulated, thus guiding them not to hinder the reform process due to changes in their positions or damage to their interests and providing a boost to corporate reform [5].

Comprehensive evaluation of enterprise business performance has full significance. First, a fair and impartial market-oriented business performance appraisal system and an up-and-down linked salary system are the fundamental basis for guaranteeing the status of business performance appraisal [6]. Only with the establishment of a supporting and perfect compensation system and performance appraisal mechanism will the application of enterprise performance appraisal results have a basis for salary linkage based on the appraisal results [7]. Second, the application and implementation of the system consolidate the status of the enterprise performance appraisal. The smooth implementation is ensured through the implementation of the appraisal system and the compensation system, as well as the continuous amendment and improvement [8]. Third, the reasonable setting of business performance appraisal objectives is the key core of the status of business performance appraisal. Only by fully combining the long-term strategic development, medium-term reform and transformation, and short-term business stability of the enterprise and quantifying them into specific detailed appraisal indicators that can be operated and implemented, can the subordinate enterprises be clearly guided to work toward the established goals, including the decomposition and conduction of performance appraisal objectives layer by layer and the responsibility of the main business body. The main responsibility of the management is to be compact. [9]. Fourth, adequate and effective authorization and supervision guarantee business performance, which is also the root of enterprise reform and guides enterprises to take the road of market-oriented corporate governance [10].

Enterprise reform and high-quality development are the two major themes of contemporary Chinese economic development, and how to maximize the role of business performance appraisal as a baton is crucial to both enterprise reform and high-quality development. This paper discusses the influence of business performance appraisal in enterprise reform from three aspects, including the importance of business performance appraisal, the guaranteed path, and the content of appraisal, and lists the specific indicators of business appraisal at each level, focusing on guiding enterprises to change from "managing enterprises" to "managing capital." Finally, the company put forward its thoughts and suggestions for strengthening the business performance assessment in conjunction with the actual work.

2. Related Work

From a microperspective (firm perspective), it was found that the share ratio, employee education, and relative size of marketing have a positive effect on firm efficiency [11]. Further tests found that the impact of mixed equity balance on firm performance is different between central and local firms; the impact is more significant for competitive industries compared to monopolistic industries [12]. The case study further found that management incentives, agency costs, and brand building are the key influencing factors for firm performance improvement, providing empirical evidence for the internal logic of hybrid reform [13]. According to the findings of [14], equity diversification, equity consolidation, and equity check and balance mechanisms have a positive effect on the efficiency of corporate innovation. The literature [15] found that the introduction of foreign capital outperforms private capital and employee stock ownership plans in improving firm performance, while employee stock ownership has little effect on improving firm performance. [16, 17] found with the help of a game model that a better legal protection environment, a higher level of shareholder monitoring, nonshareholders sharing the monitoring cost of shareholders, and good governance performance have a facilitating effect on a firm's equity structure. [18] pointed out that the entry of more groups leads to changes in the mixed ownership structure, which worsens the level of efficiency in Spain to some extent. [19] found that government funding had a negative effect on the technical efficiency of German firms, making the average technical efficiency lower. [20] found an increase in equity concentration with checks and balances based on four types of shareholder (divided into private, foreign, and natural persons) division and with the help of a regression analysis model using firm size as a threshold variable for heterogeneity.

In summary, the negative factors affecting firm performance can be broadly classified into two categories: external environmental factors, such as government funding and cultural institutions, and internal governance factors, such as the number of firms, equity concentration, and checks and balances. Positive factors affecting business performance can be broadly divided into two categories: external environmental factors including government policy support, legal protection environment, regional economic development level, introduction of foreign capital, social capital, and cultural market demand; internal governance factors including incentives, capital, brand, staff education level, relative size of marketing, equity characteristics and systems (including equity diversification, share ratio, nonequity, equity consolidation, and equity check and balance mechanisms), and supervision (including the degree of shareholder supervision and the sharing of the cost of nonshareholder supervision to shareholders). In addition, the degree of ownership mix is found to promote firm innovation, and innovation contributes to improved firm performance.

According to [21], in terms of the moderating effect of IP protection on R&D performance, its moderating effect is more pronounced in firms, private firms, and foreign firms than in firms and collective enterprises. Therefore, a sound IPR protection policy is the institutional basis for firms to improve their R&D investment. In practice, the presence of different shareholders makes the corporate governance of firms more complex than that of ordinary firms. Empirical studies have found that the consistency of shareholders' objectives, optimization of the shareholding structure, improvement of the board of directors' governance mechanism, and improvement of the external governance environment can effectively enhance the corporate governance of enterprises [22, 23]. [24, 25], using 487 sample firms from initial public offerings as a research sample, concluded that the enhancement of equity control reduces the technical

efficiency of firms when the shareholding ratio is high; there are significant differences in the effects of different types of equity checks and balances on the technical efficiency of firms. Therefore, to improve the technical efficiency of mixed-ownership enterprises, not only the share ratio should be reduced, but also the number of shares should be addressed.

To sum up, the performance of listed companies represents the development level of the whole market, and a reasonable and scientific evaluation of the business performance of enterprises and its application in the whole industry system can not only enrich the existing theoretical research in China but also improve the actual situation within the industry and in the enterprises themselves. Based on this, this paper establishes a relatively complete evaluation system for new enterprises, which can be used to obtain enterprise scores so that more enterprises can understand their strengths and weaknesses and make appropriate regulations.

3. Neural Network-Based Enterprise Business Performance Evaluation

There are numerous methods for assigning weights to evaluation system indicators, and the broad categories can be divided into subjective and objective methods. In view of the article research evaluation system in the selection of indicators has been used in the expert scoring, a more subjective means, so the entropy method is applied in the calculation of indicator weights to assign each secondary indicator.

(1) Determination of the original evaluation matrix. Based on the formed evaluation indexes, the values of each index are calculated to form $X = X_{ij}$ original evaluation matrix, where $i = 1, 2, 3, \ldots m$, $j = 1, 2, 3, \ldots, 20$. i can be different time periods of the same enterprise or different enterprises in the same time period, and j is each specific index.

(2) Dimensionless processing of indicators. In the original evaluation matrix formed, the units of each secondary indicator are different. In order to facilitate further data calculation and analysis, it is necessary to eliminate the influence brought by dimensionality and carry out dimensionless processing for each indicator. There are many methods for dimensionless processing of data, which are roughly divided into linear and nonlinear processing methods. The extreme value method, which is one of the more commonly used linear processing methods, is used here to transform the indicators of different scales into the interval [0, 1] for easy comparison. The specific transformation formula is as follows:

For the positive impact indicators, the original data are dimensionlessly processed using the following equation:

$$X'_{ij} = \frac{X_{ij} - X_{min,j}}{X_{\max,j} - X_{min,j}}, \tag{1}$$

dimensionless treatment of the raw data using the following equation for negative impact indicators.

$$X'_{ij} = \frac{X_{\max,j} - X_{ij}}{X_{\max,j} - X_{min,j}}. \tag{2}$$

For the moderate impact indicators, there are more ways to deal with them, and here, we use the relatively easier calculation formula (1) for dimensionless processing of raw data.

$$X'_{ij} = \frac{1}{1 + \left| X_{ij} - X_0 \right|}, \tag{3}$$

where X_0 is the ideal standard value of the industry in which the indicator is located.

(3) Calculation of the entropy value. After dimensionless processing, the matrix after applying the uniform dimension of formula (4) is used for the calculation of the characteristic weight matrix.

$$P'_{ij} = \frac{X'_{ij}}{\sum_{i=1}^{n} X'_{ij}}. \tag{4}$$

The characteristic weight matrix is calculated, and then the entropy value of each indicator is calculated based on this formula (5) one by one.

$$e_j = -\frac{1}{\ln n} \sum_{i=1}^{n} P_{ij} \left(\ln P_{ij} \right). \tag{5}$$

(4) Weight calculation. The following equation is applied to calculate the index weights.

$$W_j = -\frac{g_j}{\sum_{i=1}^{m} g_j}. \tag{6}$$

(5) A validity test of the evaluation index system. To know whether the evaluation system is effective after the entropy method of weighting calculation, it is necessary to test the validity of its measurement effect. First, it is necessary to verify whether the indicators in the evaluation system are independent, and the redundancy RD (redundancy degree) can be used to reflect whether there are redundant and highly correlated repeated indicators in the evaluation system. Secondly, the sensitivity SD (sensitivity degree) is used to detect whether the evaluation system has universality in time and space.

The evaluation index system can be expressed as follows:

$$R = \begin{pmatrix} 1 & r_{12} & \cdots & r_{1m} \\ r_{21} & 1 & \cdots & r_{2m} \\ \cdots & \cdots & \cdots & \cdots \\ \cdots & \cdots & 1 & \cdots \\ r_{m1} & r_{m2} & \cdots & 1 \end{pmatrix}. \tag{7}$$

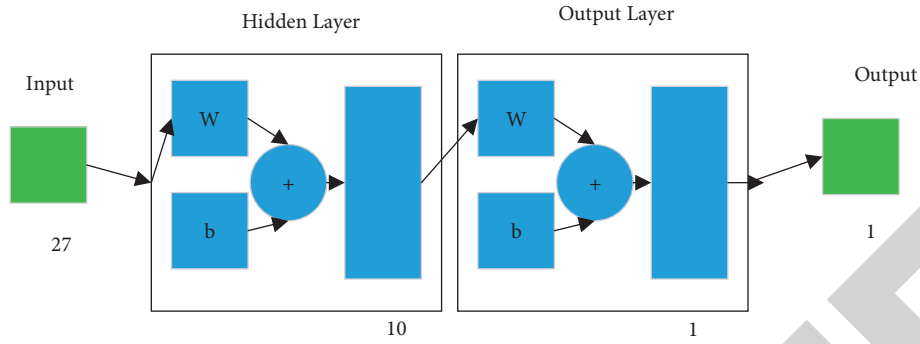

Figure 1: Neural network hierarchy diagram.

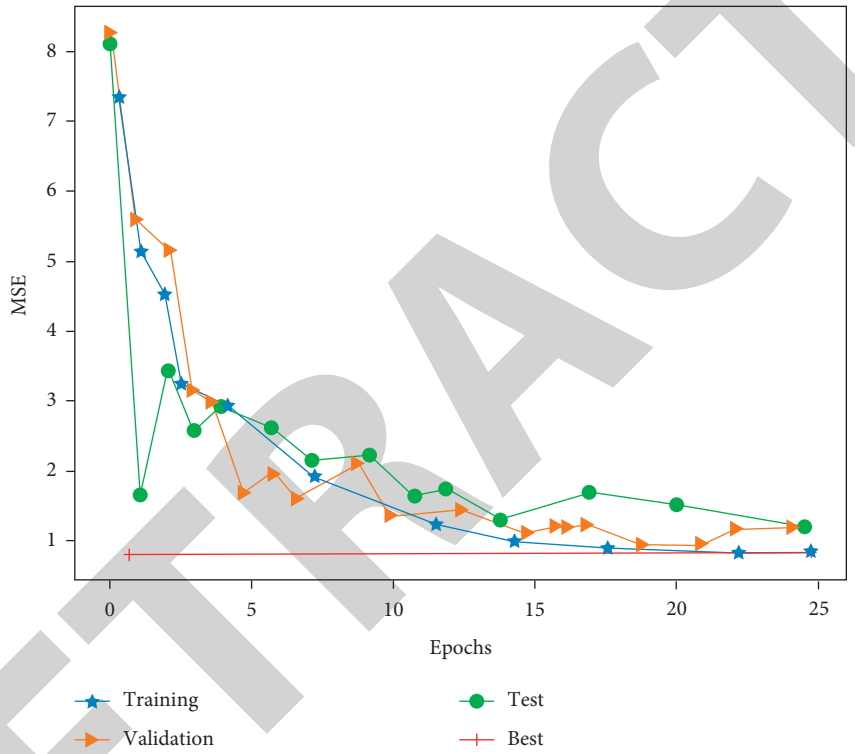

Figure 2: MSE decreases with the number of iterations.

On the basis of this matrix, the average correlation coefficient is used to measure the redundancy RD of the evaluation index system, and RD is calculated by the following formula:

$$RD = \frac{\sum_{i=1}^{m}\sum_{j=1}^{m}\left|r_{ij}\right| - m}{m^2 - m}. \tag{8}$$

Due to the complexity of each system in the economy and society, each indicator cannot be absolutely independent, and generally $RD \le 0.5$ can be considered so that the correlation between the indicators in this evaluation system is low, and the redundancy degree of the evaluation results is acceptable.

According to the calculation results of the above evaluation system, the redundancy degree of this evaluation result is calculated by applying formula (8) in Excel, and the final calculation is $\sum_{i=1}^{m}\sum_{j=1}^{m}|r_{ij}| = 180.14$; therefore, $RD = 0.42 < 0.5$, so the redundancy of this evaluation system is within a reasonable range.

A sensitivity (SD) analysis is used to test whether the evaluation index system is universal for different evaluation objects. The principle is to measure the percentage of change in evaluation results caused by a certain percentage change in the value of single or multiple evaluation indexes. The smaller the percentage of change caused, the less sensitive the evaluation system is and the more universal it is. $|SD| < 5$ can be considered that the sensitivity meets the requirements. The specific calculation formula is shown in the following equation:

$$SD = \frac{1}{m}\sum_{j=1}^{m} SD_j, \tag{9}$$

where $SD_j = \Delta V(X_j)/V/\Delta X/X_j$.

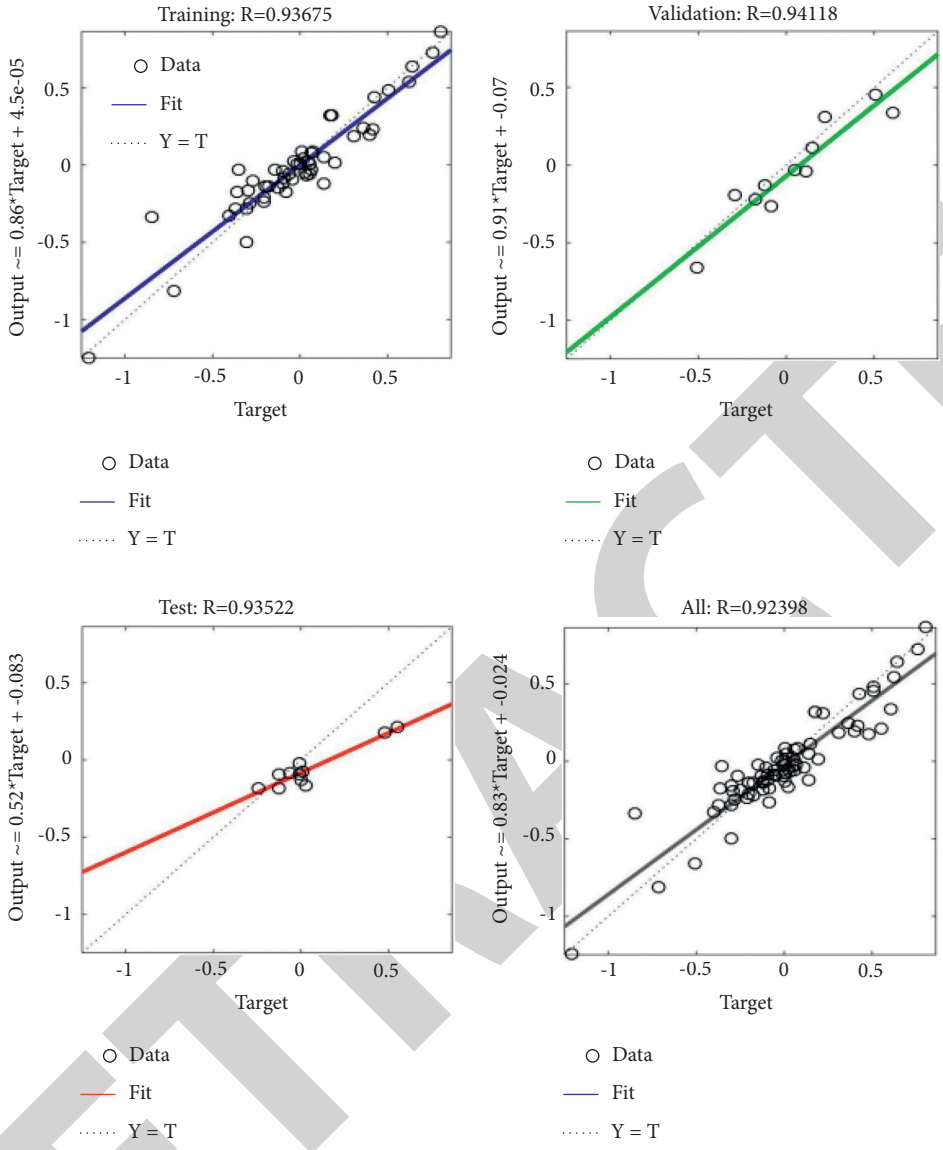

Figure 3: Scatter plot of correlation coefficient r values.

According to equation (9), the sensitivity SD of this evaluation result is 0.0142, which is much less than 5. In summary, it can be seen that the establishment of this evaluation system is effective and has universal applicability.

In this paper, the data after preprocessing and standardization are selected as the input layer of the neural network, and the integrated score of the factor analysis results is the output layer of the neural network, as shown in Figure 1 (based on MATLAB software. According to the empirical formula, the number of layers in the hidden layer should be between 5 and 15 layers, which is temporarily set to 10. There are various algorithms for BP neural network; firstly, the LM optimization algorithm is adopted, and 70% of the data in the sample are selected as training data, 15% as validation data, and the remaining 15% as test data.

The maximum number of iterations is 1000, and the iteration is stopped when the preset target is reached or when the MSE (mean square error) of the model does not decrease after 6 consecutive iterations because forcing the iteration to continue when the MSE of the model does not decrease will lead to overfitting. Figure 2 shows that when the number of iterations reaches 20–26, the MSE of the training set does not continue for 6 consecutive iterations, so the iterations are stopped. The MSE curves for the training set (blue), validation set (green), and test set (red) are shown in Figure 2.

When training a neural network model, in addition to the mean square error (MSE), there should be sufficient correlation between the input and output layers, and the correlation coefficient r values for the training, validation, and test sets are shown in Figure 3.

Figure 4 shows the distribution of training residuals (blue), control group (green), and the test group (red), indicating that most residuals are symmetrical on the 0 axis (orange line) and P axis. In order to further reduce defects, it

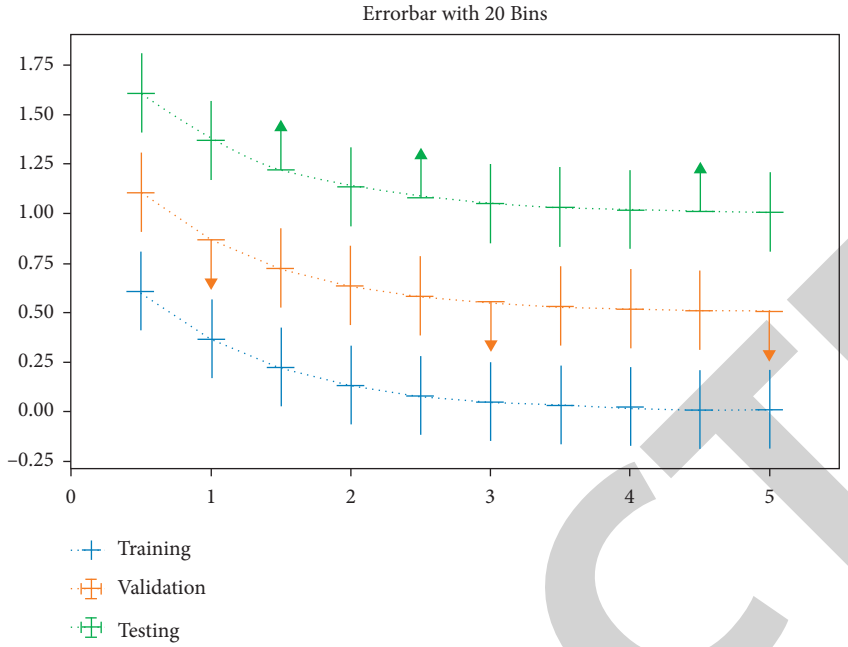

Figure 4: Residual distribution.

Table 1: Simulation prediction table.

Stock code	Stock name	Actual performance score	Predicted performance score	Actual rank	Forecast rank
600734	Salida Group	0.8076	0.8623	1	1
600171	Shanghai Beiling	0.7579	0.7267	2	2
300259	Xintian Technology	0.6454	0.6381	3	3
002210	Pegasus International	0.6241	0.5414	4	4
600271	Aisino	0.6081	0.3369	5	8
300312	Boncom Technology	−0.4025	−0.3369	71	70
002073	Soft Control	−0.5077	−0.6564	72	73
300275	Meansen	−0.7164	−0.8169	73	74
300096	E-Links	−0.8497	0.3345	74	71
600198	*ST Datang	−1.2108	−1.2483	75	75

Table 2: Comparison of the errors of the three training algorithms.

Training algorithm	Data set	Preset number of iterations	Mean square error	Mean error
LM	Training set	1000	5.99E − 07	0.0037
	Test set		1.58E − 04	0.071
Momentum gradient descent	Training set	1000	6.07E − 04	0.0088
	Test set		2.08E − 04	0.070
Bayesian regularization	Training set	1000	9.04E − 15	0.0015
	Test set		6.41E − 04	0.022

is necessary to improve the design and compilation method of model parameters.

4. Experiments

In order to make further optimization of the model before making predictions for 2017 data and before optimization, this paper first uses 2016 data as the simulation test data set for simulation testing, and for space reasons, the simulation results only show top five and bottom five, as shown in Table 1.

However, the accuracy of the predicted performance scores is not good enough, with a relative error of 7.57%. The results of this simulation show the shortcomings of the current model, which need to be optimized after another empirical exercise.

4.1. BP Neural Network Model Tuning. The model tuning of the BP neural network model mainly includes random assignment of parameter initialization, activation function optimization, learning rate optimization, regular parameter optimization, optimization of the number of neurons in the

Table 3: Comparison table of learning rate errors.

Learning rate	Process	MSE	Mean error
0.1	Training	9.04E – 15	0.0017
	Test	6.43E – 04	0.0209
0.2	Training	8.43E – 16	0.0027
	Test	7.41E – 04	0.0177
0.3	Training	9.13E – 13	0.0074
	Test	8.20E – 08	0.0107
0.4	Training	8.91E – 04	0.0093
	Test	1.08E – 12	0.0102
0.5	Training	6.44E – 12	0.0230
	Test	2.83E – 11	0.0278
0.6	Training	1.76E – 11	0.0441
	Test	3.88E – 11	0.0496
0.7	Training	4.43E – 10	0.0651
	Test	3.71E – 04	0.0682
0.8	Training	1.25E – 04	0.0811
	Test	6.02E – 04	0.0891
0.9	Training	8.32E – 04	0.1343
	Test	7.74E – 04	0.1520

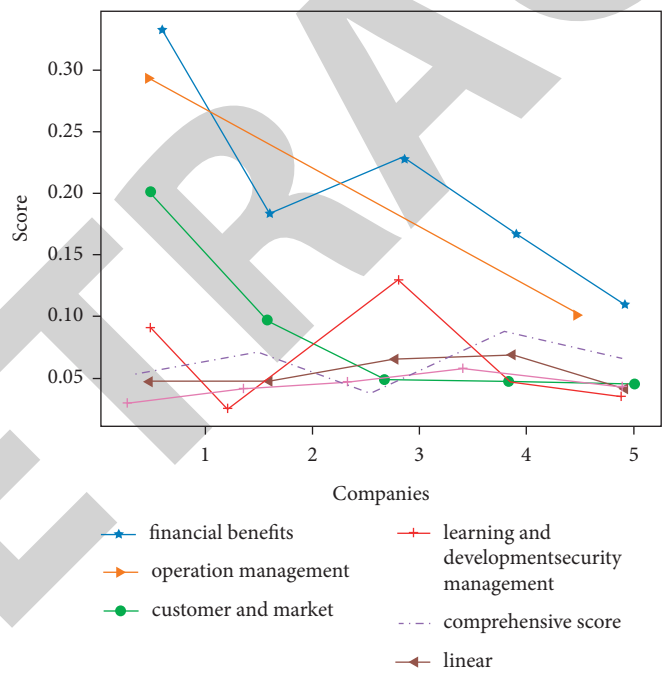

Figure 5: Trend of 2019 comprehensive business performance evaluation results of five subsidiaries.

hidden layer, training algorithm tuning, and so on. Different optimization methods optimize different points. According to the simulation results and empirical exercise data performance, the existing neural network model can already reach the qualified standard and can guarantee a relatively high accuracy when predicting unknown data, so the optimization is mainly tuning and not ready to change the basic parameters of the model. The tuning is mainly in the form of training algorithm improvement and learning rate improvement.

4.2. Training Algorithm Improvement. Given that the existing model is already very high in model fit, but there is still room for optimization in terms of accuracy, so first of all, in MATLAB, in addition to LM algorithm, other training algorithms can be used (Table 2).

The LM algorithm performs better on the training set, but the performance on the test set has a significant decline, which is caused by overfitting, that is, the model complexity is higher, the training data perform better, but the test data do not perform well; the mean square error and the average

error of the Bayesian regularization algorithm are both the smallest. However, the test set error of the Bayesian regularization algorithm is also much higher than that of the training set. Nevertheless, the average error of the Bayesian regularization algorithm is still much smaller than that of the LM algorithm and momentum gradient descent algorithm, so the training algorithm is finally changed to the Bayesian regularization algorithm.

4.3. Learning Rate Optimization. Different learning rates are chosen to verify the difference between the mean square error and average error, as shown in Table 3.

The initial default learning rate of the BP neural network model in MATLAB is 0.1. As we know from the above table, the improvement of the learning rate is very effective in optimizing the overfitting phenomenon, and the optimal learning rate is finally selected as 0.4. Although the training set error increases when the learning rate is 0.4, and the test set error is obviously reduced. Although the training set error increases when the learning rate is 0.4, the test set error decreases significantly, it is closer to the training set error, and the over-learning state is gradually transformed into the normal learning state, so 0.4 is selected as the optimal learning rate after optimization.

After the training model and learning rate optimization, the mean square error and the average error in the results have been very close and relatively low, which can be considered the initial success of model optimization, and the learning method is finally determined as the Bayesian regularization method with the maximum number of iterations of 1000, the number of implied layers of 1, the number of nodes of 10, and a learning rate of 0.4. The scores of multiple branches of an enterprise are shown in Figure 5, including financial benefits, operation management, customer and market, learning and development, security management, comprehensive score, and linear.

5. Conclusion

The performance of listed companies represents the development level of the whole market. A reasonable and scientific evaluation of the business performance of enterprises and its application to the whole industry system can not only enrich the existing theoretical research in China but also improve the actual situation within the industry and the enterprises themselves. Although scholars have covered the above categories, most of them focus on macroeconomic aspects and usually select some companies in specific industries for research, but this paper selects relatively complete domestic enterprises with scientific and effective data selection, evaluation, and ranking, which provides a sufficient theoretical basis for subsequent research and can, to a certain extent, enrich the existing performance of listed companies, index analysis, competitiveness analysis, factor analysis, and neural network analysis. On the other hand, this paper establishes a relatively complete evaluation system for the new company through which the score of the enterprise can be obtained so that more enterprises can understand their strengths and weaknesses; not only should the development goals and development direction of the enterprise need to be adjusted, but also the enterprise management mode should be innovated, and the personnel of each department of the enterprise should strictly abide by the rules and regulations and act according to the rules so as to maintain the normal operation of the enterprise, and this will provide a solid foundation for the sustainable development of the enterprise.

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors' Contributions

All authors have read and approved the manuscript for submission.

References

[1] D. Wu, Y., M. He, C. Zhang, and L. Ji, "Deep reinforcement learning-based path control and optimization for unmanned ships," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 7135043, 8 pages, 2022.

[2] G. Cai, Y. Fang, J. Wen, S. Mumtaz, Y. Song, and V. Frascolla, "Multi-carrier M-ary DCSK system with code index modulation: an efficient solution for chaotic communications," *IEEE Journal of Selected Topics in Signal Processing*, vol. 13, no. 6, pp. 1375–1386, 2019.

[3] K. Chandra, A. S. Marcano, S. Mumtaz, R. V. Prasad, and H. L. Christiansen, "Unveiling capacity gains in ultradense networks: using mm-wave NOMA," *IEEE Vehicular Technology Magazine*, vol. 13, no. 2, pp. 75–83, June 2018.

[4] F. B. Saghezchi, A. Radwan, J. Rodriguez, and T. Dagiuklas, "Coalition formation game toward green mobile terminals in heterogeneous wireless networks," *IEEE Wireless Communications*, vol. 20, no. 5, pp. 85–91, 2013.

[5] S. Palanisamy, B. Thangaraju, O. I. Khalaf, Y. Alotaibi, S. Alghamdi, and F. Alassery, "A novel approach of design and analysis of a hexagonal fractal antenna array (HFAA) for next-generation wireless communication," *Energies*, vol. 14, no. 19, p. 6204, 2021.

[6] S. Nagi Alsubari, S. N Deshmukh, A. Abdullah Alqarni, N. Alsharif, T. H H Aldhyani, and F.O. Waselallah Alsaade, "Data analytics for the identification of fake reviews using supervised learning," *Computers, Materials & Continua*, vol. 70, no. 2, pp. 3189–3204, 2022.

[7] Q. Liu, C. Liu, and Y. Wang, "etc. Integrating external dictionary knowledge in conference scenarios the field of personalized machine translation method," *Journal of Chinese Informatics*, vol. 33, no. 10, pp. 31–37, 2019.

[8] S. A. Bansode, V. R. More, S. P. Zambare, and M. Fahd, "Effect of constant temperature (20 0C, 25 0C, 30 0C, 35 0C, 40 0C) on the development of the Calliphorid fly of forensic importance, Chrysomya megacephala (Fabricus, 1794)," *Journal of Entomology and Zoology Studies*, vol. 4, no. 3, pp. 193–197, 2016.

[9] F. A. Al-Mekhlafi, R. A. Alajmi, Z. Almusawi et al., "A study of insect succession of forensic importance: Dipteran flies (diptera) in two different habitats of small rodents in Riyadh City, Saudi Arabia," *Journal of King Saud University Science*, vol. 32, no. 7, pp. 3111–3118, 2020.

[10] A. Abd, A. Fahd Mohammed, and S. P. Zambare, "New species of flesh fly (Diptera: sarcophagidae) Sarcophaga (Liosarcophaga) geetai in India," *J Entomol Zool Stud*, vol. 4, no. 3, pp. 314–318, 2016.

[11] A. M. Al-Azab, A. A. Zaituon, K. M. Al-Ghamdi, and F. M. A. Al-Galil, "Surveillance of dengue fever vector Aedes aegypti in different areas in Jeddah city Saudi Arabia," *Advances in Animal and Veterinary Sciences*, vol. 10, no. 2, pp. 348–353, 2022.

[12] A. R. Alqahtani, A. Badry, S. A. Amer, F. M. A. Al Galil, M. A. Ahmed, and Z. S. Amr, "Intraspecific molecular variation among Androctonus crassicauda (Olivier, 1807) populations collected from different regions in Saudi Arabia," *Journal of King Saud University Science*, vol. 34, no. 4, Article ID 101998, 2022.

[13] R. Ali, M. H. Siddiqi, and S. Lee, "Rough set-based approaches for discretization: a compact review," *Artificial Intelligence Review*, vol. 44, no. 2, pp. 235–263, 2015.

[14] M. V. Achim, S. N. Borlea, and C. Mare, "Corporate governance and business performance: evidence for the Romanian economy," *Journal of Business Economics and Management*, vol. 17, no. 3, pp. 458–474, 2015.

[15] R. Varadarajan, "Customer information resources advantage, marketing strategy and business performance: a market resources based view," *Industrial Marketing Management*, vol. 89, pp. 89–97, 2020.

[16] D. I. Prajogo, "The strategic fit between innovation strategies and business environment in delivering business performance," *International Journal of Production Economics*, vol. 171, pp. 241–249, 2016.

[17] R. Arteaga and S. Menéndez-Requejo, "Family constitution and business performance: moderating factors," *Family Business Review*, vol. 30, no. 4, pp. 320–338, 2017.

[18] H. Aghazadeh, "Strategic marketing management: achieving superior business performance through intelligent marketing strategy," *Procedia-Social and Behavioral Sciences*, vol. 207, pp. 125–134, 2015.

[19] W. Y. Wang, D. J. Pauleen, and T. Zhang, "How social media applications affect B2B communication and improve business performance in SMEs," *Industrial Marketing Management*, vol. 54, pp. 4–14, 2016.

[20] M. E. Agwu, "Analysis of the impact of strategic management on the business performance of SMEs in Nigeria," *Academy of Strategic Management Journal*, vol. 17, no. 1, pp. 1–20, 2018.

[21] A. Exposito and J. A. Sanchis-Llopis, "Innovation and business performance for Spanish SMEs: new evidence from a multi-dimensional approach," *International Small Business Journal*, vol. 36, no. 8, pp. 911–931, 2018.

[22] V. Ferrón-Vílchez, "Does symbolism benefit environmental and business performance in the adoption of ISO 14001?" *Journal of Environmental Management*, vol. 183, pp. 882–894, 2016.

[23] S. J. Anderson, R. Chandy, and B. Zia, "Pathways to profits: the impact of marketing vs. finance skills on business performance," *Management Science*, vol. 64, no. 12, pp. 5559–5583, 2018.

[24] U. Udriyah, J. Tham, and S. M. F. Azam, "The effects of market orientation and innovation on competitive advantage and business performance of textile SMEs," *Management Science Letters*, vol. 9, no. 9, pp. 1419–1428, 2019.

[25] P. Akhtar, J. G. Frynas, K. Mellahi, and S. Ullah, "Big data-savvy teams' skills, big data-driven actions and business performance," *British Journal of Management*, vol. 30, no. 2, pp. 252–271, 2019.