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Research Article

The Impacts of Internet + Rural Financial Industry on County Economy and Industrial Growth Algorithm

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In recent years, commercial banks and rural financial institutions in and below the county area have developed rapidly, and the number of outlets has increased rapidly. But for the vast rural areas of the country, the number of outlets is still limited. At present, there are still a large number of areas with zero financial coverage in rural the country. The development of the financial industry in a region not only affects the level of local economic growth but also has a good effect on improving the income level of local residents and changing the way of local economic development. To better develop rural finance and county economy, this paper constructs an artificial neural network model and FA model to predict the rural finance industry, and four indicators are selected to test the performance measurement of the model. The hit rates of the five models are 54.65%, 53.75%, 59.78%, 65.1%, and 73.08%, respectively. The model proposed in this paper has the highest hit rate and can predict rural finance more accurately as well, allowing for clearer changes in county economic and industrial growth.

1. Introduction

To meet the new requirements of agricultural development and new rural construction, a perfect rural financial system is indispensable. As the blood of economic development, finance affects all aspects of an economic subject all the time. Over the past three decades, the development of the financial industry has made great contributions to the country's industrial construction. However, in rural areas, many financial instruments that are mature in cities and towns cannot be used in agricultural production due to various restrictions.

The main reasons for the relative lag of rural financial development are as follows: first, the rural financial development started late and lacks experience; second, the rural economic development in the country has the problem of financial exclusion. It is precise because of the problem of rural financial exclusion that economic entities in rural areas cannot enjoy financial services and obtain financial products. This has led to the unsustainable development of rural finance and a lack of endogenous motivation. Deep learning analysis has penetrated the daily work of all walks of life due to its high efficiency, high plasticity, and high universality. High efficiency means using a trained neural network to evaluate a project that takes little time.

Regarding artificial intelligence algorithms, relevant scientists have done the following research. Axel G proposes using artificial intelligence algorithms to improve the sensitivity of mammography. In this case, interval cancer rates are likely to drop and the quality of the screening system to improve. Using artificial intelligence algorithms as an additional reading tool has the potential to reduce interval cancers [1, 2]. Deng G proposed an improved artificial neural network algorithm based on incremental speed optimization, which improves the integration rate and effectively avoids local congestion. The experimental results confirm that the proposed method has high information accuracy and is suitable for the stability of the classification of rocks near the carbon path. Based on an innovative human recognition algorithm, Liang H uses a vector support engine to model the effects of learning taekwondo based on an artificial intelligence algorithm. The results show that the

presented model has a clear effect and can be used in education. Vivekanadam B uses artificial intelligence algorithms to compare dermoscopy images obtained from DSLRs, smartphones, and light USB cameras to determine the accuracy of melanoma identification. He applies several algorithms for artificial intelligence based on malignant pathology, composition, and physician contributions made in detail [3, 4]. Huo uses an optimized adaptive intermediate filter algorithm and correction method to modify the KR code based on neural network regression. The AI algorithm that he works with has a definite effect to improve the validation level of KR code images [5]. The accuracy and sensitivity of Kani H T will be improved by including more images and improving the algorithm. The use of artificial intelligence in daily IBD practice could remove the subjectivity of endoscopists in diagnosing and assessing disease severity to make treatment decisions [6]. Chen measures the sensitivity, precision, and accuracy of newly developed smart bracelets. Equipped with optometry and monoclonal ECG and artificial intelligence algorithms, the device is used in the short term [7]. Saikumar K analyzes the operation and rapid diagnosis of open-heart surgery. Implementation and progress have been made using specialized image processing techniques to achieve fast and reliable detection with the help of artificial intelligence algorithms [8]. Based on machine learning algorithms, Y Wang has developed an English distance learning management system based on artificial intelligence algorithms optimized for machine learning to meet the needs of English distance learning management: evaluating student status through careful database management and assessing student learning status in a timely and efficient manner [9]. Huang et al. apply project study methods to artificial intelligence courses on robotics career planning issues in artificial intelligence. He sees career planning as a task, evaluates and examines it, and uses ant-based algorithms to find the best design path. They give students full initiative and interest and promote creativity and student collaboration [10]. To train neural networks, Ciulla developed an accurate energy database as a basis for training specific artificial neural networks. He identified the optimal ANN topology and developed a tool for quickly and easily determining the heating energy demand of non-residential buildings [11]. Aiming at the problem of the location of distribution objects in the process of logistics distribution, Cao G established an optimal path model based on the artificial intelligence algorithm-ant colony algorithm in logistics distribution. He analyzed the pheromone concentrations along the paths between various locations and found the optimal path [12, 13]. To improve the accuracy of glioma distribution, Zhang proposed an MRI technique based on a complex three-dimensional rotation of neural tissue. Experiments show that this method can be adapted to different and different procedures in different patients and improve the accuracy of brain tumor diagnosis [14]. Zhao uses bitter data processing and separation techniques to analyze the visual characteristics of a martial arts match. He evaluated abstract models and confirmed proposed methods for improving decision-making skills and effective education in classical martial arts [15]. Smart radio networks can use artificial intelligence technology for efficient sensing and decision-making. Mourad M proposed an algorithm for a blind spectrum recognition adapter based on a centralized recognition platform. He then applies neuronal phase adapter interference technology in decision-making to make the best and most accurate decisions [16]. This method provides some reference for the study, but due to the short duration and small size of the study model, this study has not yet received any public recognition.

The innovation of this paper is the introduction of the concept of artificial intelligence algorithms. It described artificial intelligence in detail in the Method section and made statistics on the related concepts of rural finance and financial data in recent years. It builds the FA prediction model and compares it with the artificial neural network prediction model. It tests the predictive ability of the model chosen in this paper and finally predicts the rural financial industry [17].

This paper introduces the research background and significance of the article in the introduction section and refers to the relevant research results of other scientists in recent years, the methodology section explains the concepts related to artificial intelligence algorithms and rural finance, and the experimental section analyzes the results of economic growth analysis to predict the rural finance industry using artificial neural network model and FA model.

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2. Research Methods

2.1. Artificial Intelligence Algorithms. Artificial intelligence, also known as mechanical intelligence or simply AI, refers to the intelligence displayed by man-made machines. Artificial intelligence is generally understood as a technology that uses popular computer programs to provide human intelligence. The term also describes how and whether such intelligent systems can be studied. A special section on artificial intelligence in the general text is "Research and design of intelligent agents." Artificial intelligence is a field of computer science that seeks to understand the nature of intelligence and create new types of brains such as the human mind. Areas of study in this area include language analysis, image analysis, and life sciences, professional processes and systems, and more. Since the emergence of artificial intelligence, theory and technology have become lost and the field of programming continues to expand. Artificial intelligence can mimic the information processes of the human mind and spirit [18]. AI is not human intelligence but can think as human or exceed human intelligence. Figure 1 shows the structure of a single hidden layer neural network.

Heavy scientific and engineering calculations are meant to be undertaken by the human brain. Today's computers can not only do this kind of calculation but can do it faster and more accurately than the human brain. Therefore, contemporary people no longer regard this kind of computing as a "complex task that requires human intelligence to complete." It can be seen that the definition of complex work changes with the development of the times and the

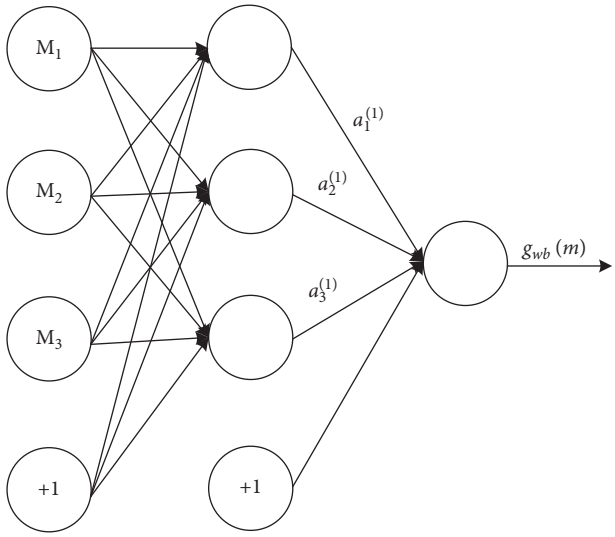

Figure 1: Single hidden layer neural network structure diagram.

advancement of technology. The specific goals of the science of artificial intelligence also naturally evolve with the times. It keeps making new progress on the one hand and turns into more meaningful and difficult goals on the other.

Artificial intelligence is the study of certain processes that build computers to simulate human thought and mental behavior such as learning, thinking, thinking, and programming. And computer engineering can reach a high level of application. The relationship between artificial intelligence and ideological science is the relationship between practice and theory, and artificial intelligence applying technology. When it comes to thinking, AI is more than logical thinking. To promote the successful development of artificial intelligence, it is necessary to learn imaginative and practical thinking. Mathematics is considered the basic science of many subjects. Mathematics also goes into language and thinking. Information services also need to borrow mathematical tools. Not only does mathematics play a role in formal logic, black mathematics, etc., but when mathematics enters the various fields of artificial intelligence, it offers advantages and rapid evolution. As shown in Table 1, there are three information processing paradigms.

Artificial intelligence is still being researched, but some scholars believe that it is dangerous to let a computer have an IQ, and it may turn against humans. This hidden danger has also occurred in many movies. Its main key is to allow machines to have the generation and continuation of autonomous consciousness. If a machine is made to have autonomous consciousness, it means that the machine has the same or similar creative, self-protective consciousness, emotion, and spontaneous behavior as a human.

There are two different ways in which artificial intelligence is implemented on a computer. One is to use traditional programming techniques to make the system appear intelligent, regardless of whether the method used is the same as that used by the human or animal body. This method is called the engineering method, and it has made achievements in some fields, such as character recognition, computer chess, and so on. The other is the simulation method, which not only depends on the effect but also requires that the realization method is the same or similar to the method used by human or biological organisms.

Nerve cells are the most important building blocks of the brain. There are differences in the structure of different neurons, which somehow combine with other neurons to form complex neural networks. But from the perspective of transmitting and remembering information, biological neurons have the same structure regardless of their type. Biological neurons must first adopt appropriate mathematical models. Data transfer between biological neurons involves many factors, which have many consequences. Not all relevant factors can be considered when creating a model, and some irrelevant implications should be ignored.

The output of the neuron can be expressed as

$$n_v = \operatorname{sgn}\left(\sum_{u=1}^{b} q_{uv} m_u - \theta_v\right). \tag{1}$$

θ_v-The action threshold of the neuron.

The expression sgn is as follows:

$$n_v = \operatorname{sgn} = \left\{ +1,\ \sum_{u=1}^{b} q_{uv} m_u > \theta_v - 1, \sum_{u=1}^{b} q_{uv} m_u \le \theta_v \right\}. \tag{2}$$

m_u-Input vector. q_{uv}-The weight value of the neuron. θ_v-Neuron threshold. n_v-The output value of the neuron.

It selects the commonly used unipolar function as the activation function of the neuron:

$$f(i) = \begin{matrix} 1, \\ 1 + e^{-i}, \end{matrix} \tag{3}$$

$$x_v^l = f\left(\sum_{u=0}^{B_{l-1}} q_{v,u}^l x_u^{l-1}\right). \tag{4}$$

x_v^l-The activation value of the node through the action of the transfer function. $q_{v,u}^l$-Weight coefficient between units.

It measures the network objective function as the sum of squared total errors:

$$H_p(t) = \frac{1}{2}\left(\sum_R s_{Rp} - n_{Rp}\right)^2. \tag{5}$$

$H_{Rp}(t)$-Objective function at the input.

The weight adjustment formula is as follows:

$$q_{v,u}^l(t+1) = q_{v,u}^l(t) - \varepsilon \frac{\partial H(t)}{\partial q_{v,u}^l} = q_{v,u}^l(t) - \varepsilon \sum \frac{\partial H_p(t)}{\partial q_{v,u}^l}. \tag{6}$$

ε-Step size, and learning rate.

Table 1: Three information processing generic types.

Project	Regular computer	Neural computing	Human brain
Information presentation	Instruction + data	Network connection processing unit function + weight	Internal neural connections
Programming	Instruction + initial data	Network topology + pattern training	Pattern training
Deal with	Digital	Digital or analog	Analog
Architecture	$1–10^4$ processor	$1–10^6$ processor	10^{11} neurons
Hardware	Integrated circuits	Electrical, optical, biological devices	Neurons
Switching speed	1 ms	$1\ \text{ns}^{-1}\cdot\text{ms}$	1 ms
Craft	Silicon devices	Silicon devices, optical, molecular	Biological

$$\begin{aligned}\frac{\partial i_v^l}{\partial q_v^l} &= \frac{\partial}{\partial q_{v,u}^l} \bullet f\left(\sum q_{v,b}^l i_b^{l-1}\right) \\ &= i_v^l\left(1 - i_v^l\right) i_u^{l-1}.\end{aligned} \tag{7}$$

i_v^l-The activation output value of the node.

In turn, the partial derivatives of the output layer of the network can be calculated as

$$\frac{\partial H_p(t)}{\partial i_v^l} = i_v^l\left(m_p\right) \bullet s_v\left(m_p\right), \tag{8}$$

$$\phi_v^l = \lambda_v^{l+1}\left(f'\left(i_v^l\right) \circ up\left(\phi_v^{l+1}\right)\right). \tag{9}$$

$\circ$-Dot multiplication. up$(\bullet)$-Upsampling operation.

$$\frac{\partial E}{\partial k_{uv}^l} = \sum_{i,j}\left(\phi_v^l\right)_{ij}\left(p_u^{l-1}\right)_{ij}. \tag{10}$$

$(p_u^{l-1})_{ij}$-An area that is multiplied element-wise. i, j-Image coordinates in the feature map. H-The cost function of the network.

$$\phi_v^l = f'\left(i_v^l\right) \circ \frac{\partial H}{\partial k_{uv}^l}, \tag{11}$$

$$H = -\frac{1}{n}\sum_m \sum_v \left[n_v \ln x_v^l + \left(1 - n_v\right)\ln\left(1 - x_v^l\right)\right] + \frac{\eta}{2b}\sum_\omega \omega^2. \tag{12}$$

ω-Training weights. b-Number of training instances.

$$\xi^{l+1} = \xi^l - (\varepsilon\varphi)\left[\frac{\lambda}{b}\xi^l - \frac{1}{m}\sum_m \frac{\partial H_m}{\partial q}\right]. \tag{13}$$

φ-Learning rate during network training. ε-Learning rate control coefficient. λ-Weight decay control coefficient.

$$Q^l \sim U\left[-\frac{8}{p^l + p^{l-1}}, \frac{8}{p^l + p^{l-1}}\right], \tag{14}$$

$$\xi^{l+1} = \xi^l - \frac{\varphi\phi}{b}\xi^l - \frac{\varphi}{a}\sum_m \frac{\partial H_m}{\partial q}. \tag{15}$$

U-Evenly distributed. p^l- Number of feature maps.

Neural network theory is based on the anatomy of neurons in the brain, which are interconnected, but unlike neurons in the brain that can connect to any neuron in the distance. An artificial neural network consists of different layers, connections, and directions of data transfer. Figure 2 shows a schematic diagram of the visual layer module.

The deep learning machine is a big data all-in-one product that realizes deep learning calculation, acceleration, data storage, and specific application integration through the integration of software and hardware. The software module deep learning analysis platform in the deep learning machine can provide a variety of current mainstream machine learning frameworks. This enables users to choose different computing frameworks to accelerate computing according to their needs. As shown in Figure 3, the deep learning analysis platform structure diagram.

The forward propagation process defines receiving data from the previous layer and passing it to the latter layer after calculation. The back-propagation process calculates the gradient relative to the input according to the gradient of the output of the latter layer and transmits it to the former layer. The purpose is to modify the parameters of each layer according to the loss to achieve a more accurate calculation effect. A network is a directed acyclic computational graph consisting of a series of layers. It consists of a series of layers and the interconnections between them. After the data are read from the training dataset, it is divided into a dataset for training and data for calculating loss. It then passes the data into the loss layer for training and then compares it with the data set to obtain the loss. The logistic regression network structure is shown in Figure 4.

2.2. Agricultural Finance. Rural finance is monetary financing and capital financing in rural areas. These are all companies related to rural currency circulation and loans. It is a mix of credit, finance, and rural economy. Fundraising, distribution, and management of funds in rural areas refer to the financing of rural monetary funds. Figure 5 shows the comparison of the debt ratio of small and medium-sized banks and the assets and liabilities of banking financial institutions in 2020.

The form and organization of village-level financial transactions are only external aspects of village-level finance. Rural financial institutions are the creators of special rural capital. Its emergence and development is the inevitable result of community division of labor, and it is the development of social labor distribution based on market development. When the demand for financial products and services in rural economic development and market

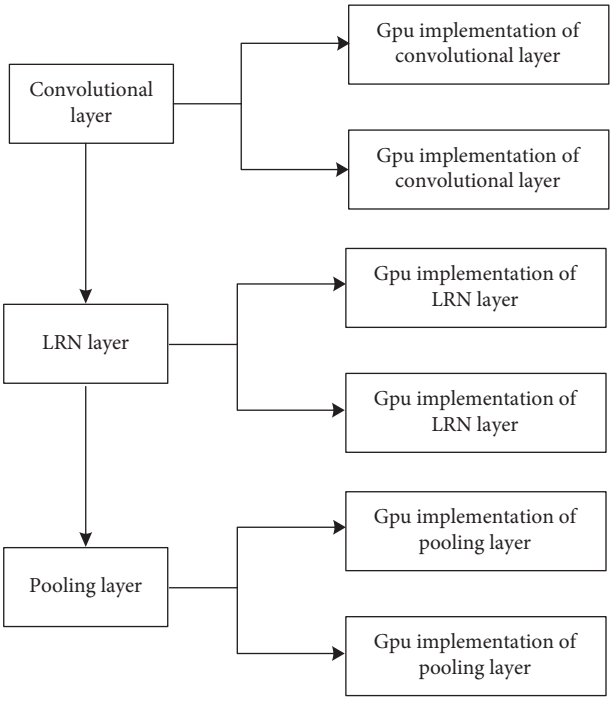

Figure 2: Schematic diagram of the visual layer module.

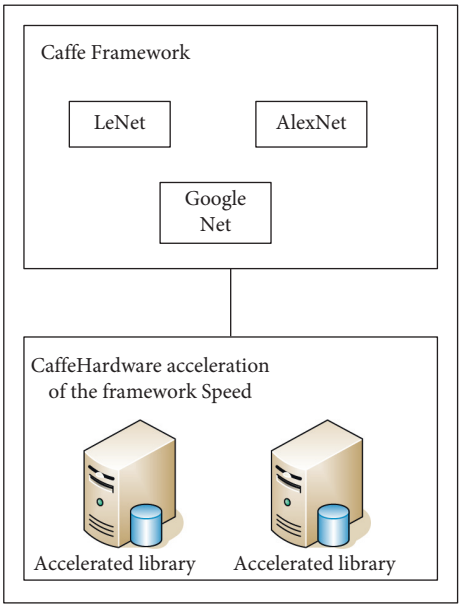

Figure 3: Deep learning analytics platform architecture diagram.

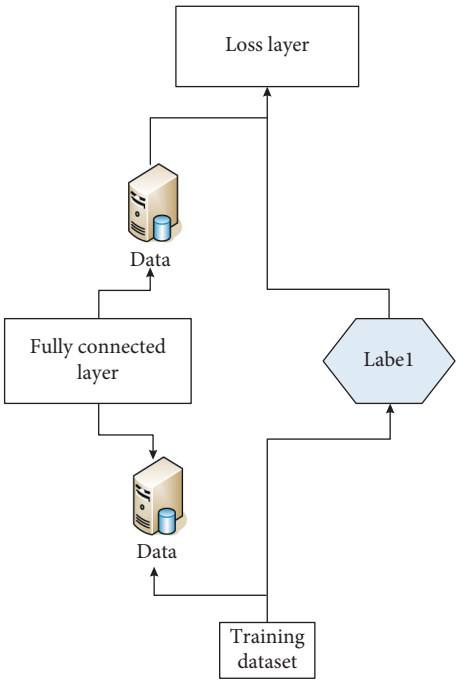

Figure 4: Logistic regression network structure.

expansion reaches a certain level, it provides intermediary services for "professional institutions." On the other hand, as long as the conditions for rural financial transactions are met, these conditions can ensure that rural financial transactions reach a certain level. Markets have created similar incentives for rural financial institutions.

On the other hand, if the current state of village financial transactions is ignored and the integration of new village financial institutions into the village economy does not increase the number of transactions in the village, it can put financial institutions in the village. It can be observed that the number of financial institutions in the village is a function of the economic function of the village.

Economic exclusion can also be defined at six levels: geographical exclusion, price exclusion, conditional exclusion, price foreclosure, market foreclosure, and foreclosure. The so-called geographic exclusion refers to the financial exclusion of economic subjects due to the long distance from the place where they obtain financial services. The further the distance between the two, the greater the degree of repulsion. The so-called evaluation exclusion refers to the financial exclusion due to the access evaluation of economic entities by financial institutions. The more stringent the evaluation conditions, the greater the degree of exclusion. The so-called conditional exclusion refers to the financial exclusion of economic entities due to unfair transactions. The more conditions attached, the greater the degree of exclusion. The so-called price exclusion refers to the financial exclusion of economic entities due to the high transaction cost of obtaining financial resources. The higher the transaction cost, the greater the degree of exclusion. The so-called marketing exclusion refers to the financial exclusion of economic entities due to the sales positioning of financial institutions. The more precise the sales target, the greater the exclusion. The so-called self-exclusion refers to the financial exclusion of economic subjects due to a lack of endogenous motivation. The smaller the self-motivation, the greater the degree of repulsion.

Financial exclusion, understood from a sociological perspective, is interrelated with social exclusion and is a subset of social exclusion. Social exclusion includes financial exclusion. Residents who are financially excluded are also socially excluded, and other aspects of residents are usually excluded to varying degrees accordingly. On the other hand,

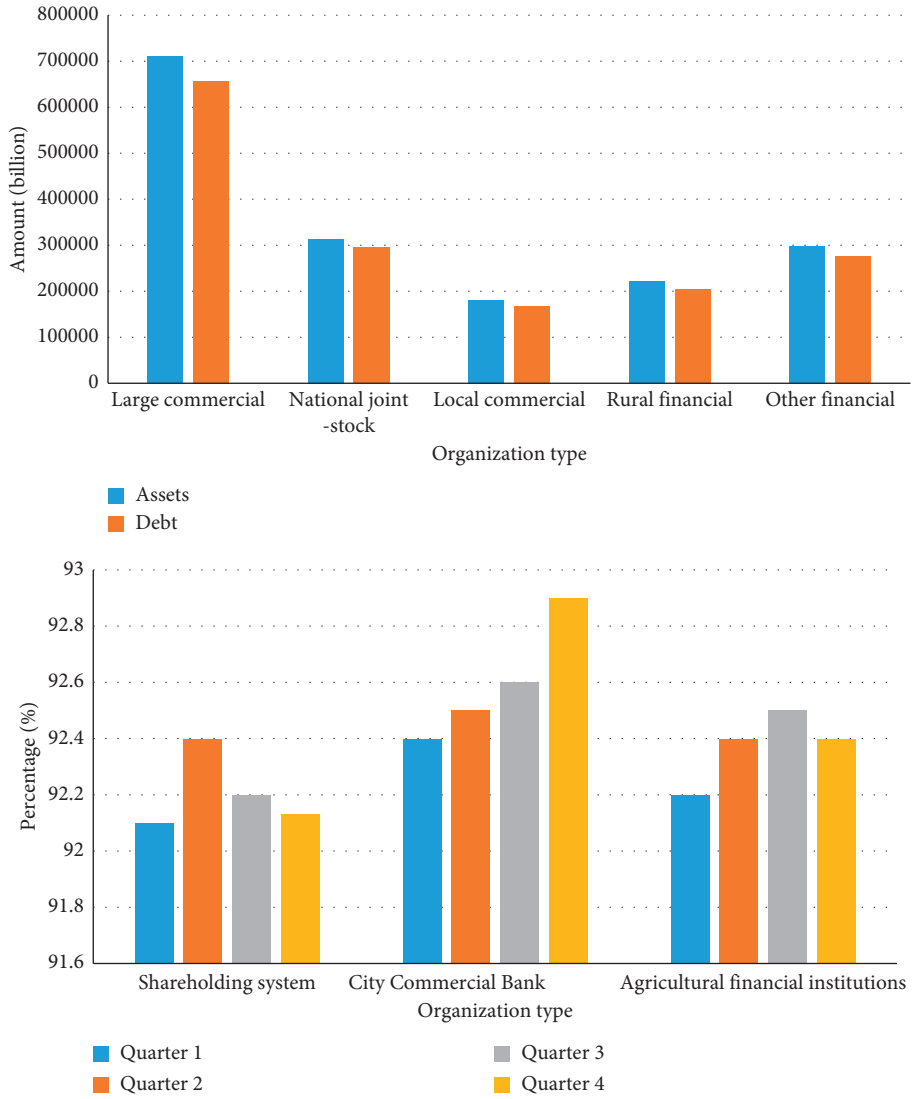

Figure 5: Comparison of debt ratio of small and medium banks.

social exclusion and financial exclusion are mutually causal. Residents are socially excluded due to financial exclusion, which in turn deepens financial exclusion due to social exclusion. Conversely, residents will also experience financial exclusion due to social exclusion, and financial exclusion will deepen social exclusion.

Financial exclusion is most evident in the vast rural areas. The long-term uneven allocation of resources has led to a widening gap between urban and rural areas. The consequence of the gap between urban and rural areas is the overall low production capacity and output level of the rural economy, and financial development is naturally limited. The fragmented development of urban and rural finance has further deteriorated the rural economic development environment. The rural financial ecological environment is a vicious circle and shows a significant Matthew effect. This is not conducive to the coordinated and mutual development of regions in China's urban and rural areas, nor is it conducive to the poverty alleviation and prosperity of the vast rural areas and rural population in the country.

The main causes of rural financial exclusion are geographical exclusion, active exclusion of financial institutions, and autonomous exclusion of excluded groups. Among them, the supply-oriented factor that causes rural financial exclusion is the active exclusion of financial institutions. This is the direct cause and is a superficial analysis of the causes of rural financial exclusion. However, no further research has been done on the root causes of the active exclusion of financial institutions. Although the problem of rural financial exclusion is only one of the many financial problems in the process of economic development, it still has the essential attribute of finance, that is, the profit-seeking nature of the financial industry. Therefore, it is not enough to just stop at the research results of the cause of the active exclusion of financial institutions. We must fundamentally study the profit-seeking nature of the financial industry to solve both the symptoms and the root causes and solve the problem of rural financial exclusion.

A common phenomenon in the country's rural areas is that even rural residents with financing needs and solvency

are still excluded from financial services. Rural finance is an important part of the rural economy. To a certain extent, the development of the rural economy depends on and attaches to rural finance. On the other hand, the "three rural problems" that have long plagued the country and the industrialization and modernization of agriculture and villages in the country to new standards, all depend on the development and rural economy. Only focusing on improving rural economic development and reducing economic exclusion in rural areas can effectively overcome the above problems. In the current Chinese institutional framework, the mismatch between supply and demand in rural finance is mainly reflected in the following three factors: First, the profit-seeking behavior of capital will make capital actively choose trading partners with low risk and high profit. Second, the transaction subject is always in an unequal transaction position in the process of information game and transaction, which increases the transaction cost paid by both parties to complete the contract. Third, the ability of agriculture to resist risks is weak. Farmers have almost no material properties with stable value, and even if they own a small amount of assets, they generally lack market recognition. Under the combined effect of the above three problems, the level of rural economic development, the level of agricultural industrialization, and the large-scale development of modern agriculture will all be affected to a greater extent.

Commercial banks and rural financial institutions in and below the county area developed rapidly, and the number of outlets increased rapidly. But for the vast rural areas of the country, the number of outlets is still limited. At present, there are still a large number of areas with zero financial coverage in rural the country. The type and number of financial institutions can neither meet the financial needs of rural areas in the country at this stage, nor can they meet the construction requirements of new rural areas under the new normal in the future. From the point of view of operating conditions, in the market share of the entire banking financial institutions, rural financial institutions account for a relatively small proportion.

The main reasons for the relatively lagging development are as follows: first, the rural financial development started late and lacked experience. Second, the economic development of the country's rural areas has the problem of financial exclusion. It is precise because of the problem of rural financial exclusion that economic entities in rural areas cannot enjoy financial services and obtain financial products. This has led to the unsustainable development of rural finance and a lack of endogenous motivation.

3. Research Results

The artificial neural network model chosen as the reference model in this paper is a three-layer BP neural network, which can approximate any function. This is a single forecasting model that directly uses neural network technology to forecast rural financial sequences. BP neural network includes an input layer, hidden layer, and output layer, and adopts a parallel network structure. Hidden layer

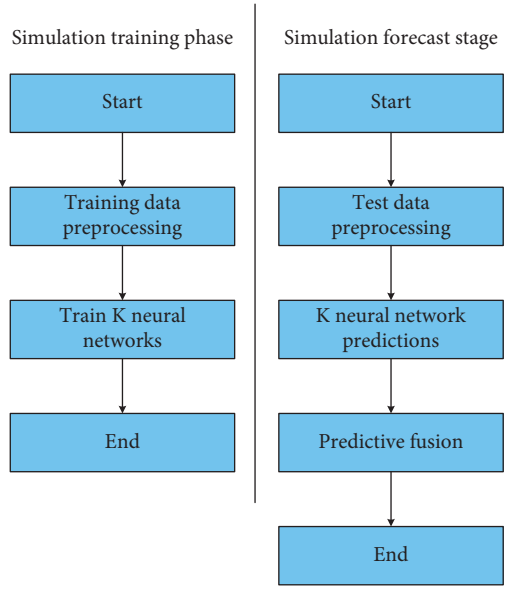

Figure 6: A predictive model of rural finance based on artificial neural network.

neurons take values ranging from 2 to 10. It can directly use the rural financial industry as a training set, input it into the neural network, and the output variable is the predicted value. As shown in Figure 6, it is a rural financial prediction model based on an artificial neural network.

The FA models proposed in this work include, in particular, algorithms for degeneration, development, baseline analysis, and regression of neural networks. A general sample flow chart is shown in Figure 7. The FA portfolio forecasting model is based on the idea of decomposition reconstruction integration, which improves the learning ability of the model for financial time series as well as multiple objective functions and effectively improves the forecasting accuracy.

Exercises are trained, a loss percentage is reserved for 100 exercises, and test machine data are used to test each of the 500 exercises. The results of the experiment are shown in Figure 8.

Figures indicate that a fair share of the FA model proposed in this article is always higher than the artificial neuron model, and the method in this paper fluctuates from the 2000th to the 5000th time. However, the accuracy rate is generally higher than that of the artificial neural network model.

The loss scale measures the likelihood that data will fall into a particular category. The smaller the function loss, the faster the tissue falls. If the number of repetitions is 500, the loss pattern of the FA model is higher than that of the artificial nervous system model. Thus, the integration of the FA model is faster in the early stages. The loss function data comparison is shown in Figure 9.

Taking the rural financial industry in a certain area as the target, and collecting and collecting from the financial database, all experimental data can be divided into two subsets: a set of exercises and a set of tests. The first 1000 data are a

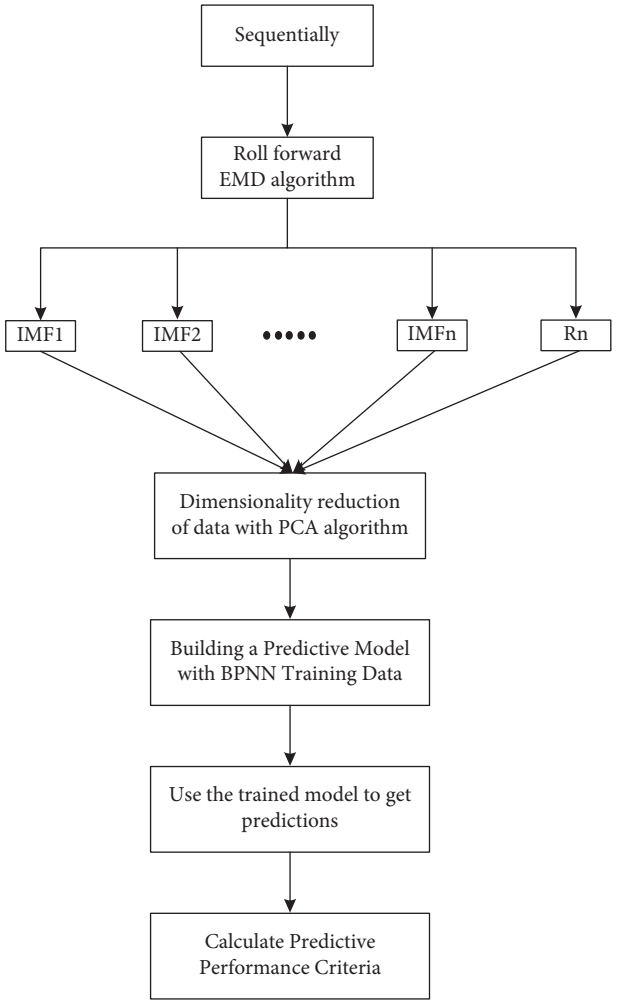

Figure 7: Overall flow chart of the model.

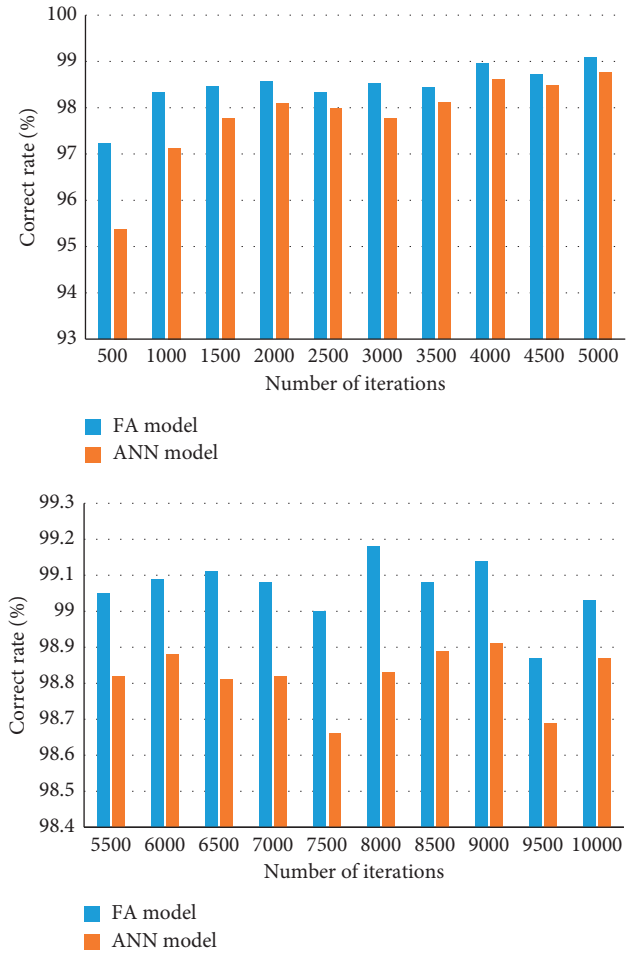

Figure 8: Training set test results.

training set, and the last 250 data are a test set, as shown in Table 2 for the data results.

Although an accurate forecast of the rural financial industry will be difficult to obtain, a rough forecast of the upward and downward direction of change is still helpful in the analysis of county-level economic and industrial growth. The performance measurement results of each prediction model are shown in Table 3.

To test the predictive strength of the sample selected in this article, a variety of rural financial sectors and four indicators were used as performance indicators in an experimental database. As shown in Table 4, the performance improvement percentage of the model used in this paper is compared with other models.

The FA model proposed in this paper is used to predict the sequence of the rural financial industry, as shown in Figure 10 for the relevant data of the prediction results.

A limited level of rural financial services will make it difficult to meet the multilevel needs of the county's economic development, and forecasting rural finance can make predictions about the county's economy.

The comprehensive and efficient use of relevant information helps to improve prediction accuracy. In actual forecasting, information will be comprehensively used when predicting the future trend of the rural financial industry, not just superficial information. Empirical findings show that almost all data sequences are close to random walks if only superficial information is used. However, the comprehensive use of transaction information can effectively improve the forecasting ability of the index fluctuation trend.

At present, the development of the rural financial industry in the province plays an important role in the agricultural economy: First of all, the sound financial laws and regulations make the rights and interests of both lenders and borrowers legal protection. Various financial institutions in rural areas have laws to abide by in the process of granting loans, which reduces the unsystematic risks of financial institutions. At the same time, for farmers, loans and insurance in the process of agricultural production will be guaranteed by law. Second, the reform of the financial system gradually removes financial regulation and develops towards financial liberalization, forming a sound market-oriented financial system. The interest rate level in the rural financial system has gradually reached a market-clearing state. Savings and investments continue to increase so as to promote the level of investment in agriculture by institutions

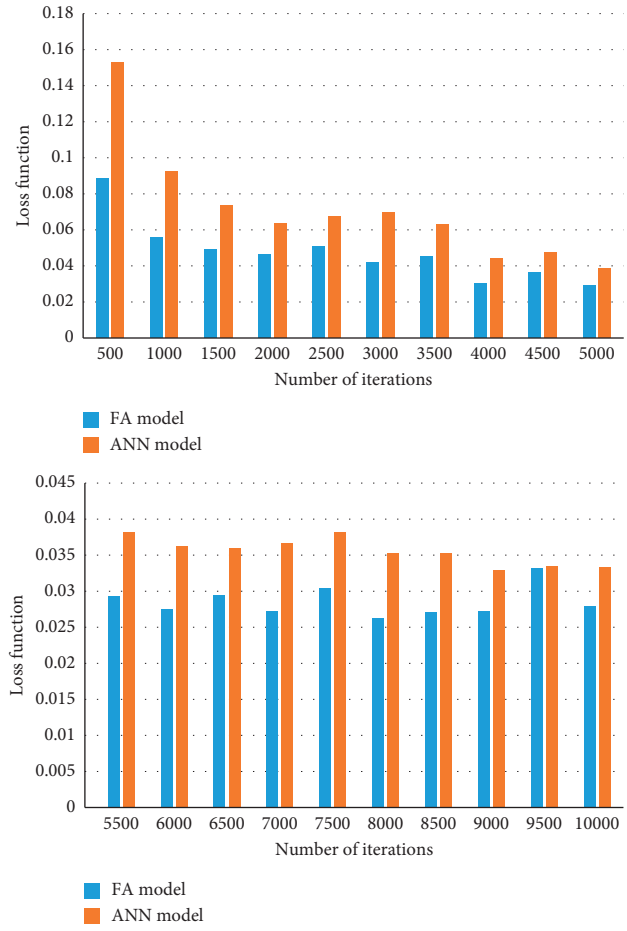

Figure 9: Loss function data comparison.

Table 2: Data results.

Index	Mean	Standard deviation	Maximum value	Minimum	Skewness
All samples	2830.256	668.987	5353.9	2085.97	1.4249
Training set	2588.954	399.821	4123.75	2853.97	1.2762
Test set	3797.528	652.457	5353.78	2086.76	0.6753

Table 3: Performance measurement results for each prediction model.

Model	Performance standard			
	MD	ME	RE	DS (%)
AA	91.3678	1.8257	109.6856	54.65
GH	108.8479	2.928	138.3183	53.75
BN	186.5833	3.4082	252.7856	59.78
ED	66.2832	1.9836	88.8658	65.1
FA	57.8421	1.3988	75.4756	73.08

Table 4: Percentage improvement in performance compared to other models.

Model	Performance standard			
	MD (%)	ME (%)	RE (%)	DS (%)
AA	37.4	33.22	31.61	35.59
GH	47.49	42.38	45.11	36.64
BN	69.39	66.21	70.05	22.4
ED	14.56	6.42	15.35	11.45

and individuals and increase the agricultural output value of Shanxi Province to drive the growth of Shanxi Province's agricultural economy. Third, the development of the financial industry itself helps to increase capital accumulation and improve the efficiency of resource use. It helps to improve the level of advanced agricultural production intensification through the development of rural financial industry, eliminate backward production models, and increase scientific and technological investment in agricultural production. This realizes the efficiency, scale, and mechanization of agricultural production and thus increases the output value per unit area. Fourth, the rural financial industry can play a role in preventing and controlling agricultural production risks. Village and township financial institutions that issue agricultural loans will spontaneously supervise agricultural production risks, which reduces the supervision cost of agricultural production risks. At the same

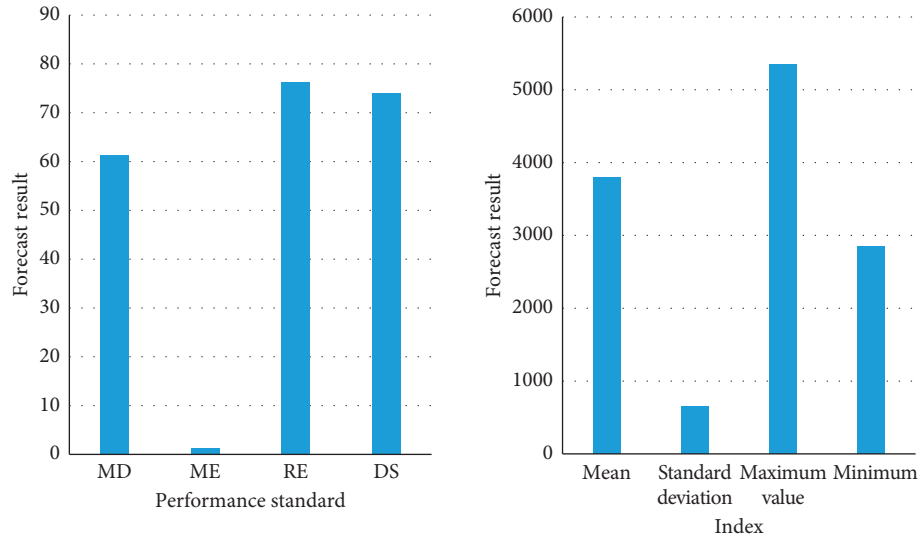

Figure 10: Data related to prediction results.

time, the continuous enrichment of rural financial instruments can also play a role in controlling risks. It greatly reduces the risk of farmers' agricultural production through the rational use of agricultural insurance, futures, and other tools. This has improved farmers' enthusiasm for production and greatly promoted the modernization of agriculture.

The role of the financial industry in promoting agriculture is currently mainly reflected in agricultural credit. The ratio of the amount of funds obtained by agricultural credit to the added value of the agricultural industry represents the degree of financial asset correlation in agricultural production. The increase in the financial correlation rate of agricultural production has a certain positive impact on the growth rate of the agricultural economy, but the current degree of impact is not high. At the same time, due to the current implementation of the agricultural credit subsidy policy, the approval and issuance of agricultural credits are mainly based on the amount and effectiveness, resulting in a low recovery rate of agricultural loans. In the long run, the continuous investment of such a large amount of funds in agriculture will lead to the shrinking of the development of other industries, which is ultimately detrimental to the development of the agricultural economy.

4. Discussion

With the deepening of the new rural construction, the reform of the agricultural economic system has made great progress, but the current rural financial system is seriously lagging behind the development of the agricultural economy. Establishing a sound rural financial system is an urgent need to further promote the development of "agriculture, rural areas, and farmers." Due to the late start of the rural financial industry, there are a lot of problems in financial laws and regulations, financial institution setup, financial supervision, financial institution asset quality, and financial practitioners' quality. As for improving the rural financial system: first, we should establish and improve local financial laws and regulations according to the current situation of the rural financial industry. This provides guidelines and legal safeguards for the financial activities of rural formal financial institutions and informal financial institutions. Second, the establishment of rural financial institutions should meet the needs of agricultural production, improve the risk assessment and risk supervision of agricultural credit, and improve the quality of agricultural credit assets. Third, the professional quality of current rural financial practitioners is generally lower than that in urban areas. It is necessary to improve the work efficiency of rural financial institutions by strengthening the training of employees.

At present, formal and informal financial institutions coexist in rural areas, and formal-informal financial institutions will continue to coexist in the process of interest rate liberalization. The government should combine long-term and short-term effects in the process of formulating financial policies. While grasping the level of agricultural borrowing, it is necessary to pay attention to the flow of loans and the management and control of loan risks, and actively guide the market interest rate of rural financial institutions to move closer to a stable market equilibrium interest rate. The long-term use of preferential agricultural financial policies to increase the agricultural investment will lead to the dependence of agricultural production on the government and the loss of self-development ability. It will also cause the outflow of rural funds and affect the long-term sustainable development of rural financial intermediaries. This adversely affects the formation of a sound ecosystem of rural finance and ultimately affects the effectiveness of financial policy implementation. The government should provide reasonable guidance to informal banks, lending organizations, and other institutions to make them effective tools to make up for the lack of formal financial market functions. At the same time, this will not cause damage to the rural financial market, so as to better formulate reasonable financial policies in response to the agricultural economic growth in Province and the improvement of farmers' living standards, and

improve the role of rural financial institutions in agricultural economic development.

Under a perfect rural financial system, the deposits of rural residents and township enterprises are an important source of funds for agricultural production. At present, due to the low level of agricultural economic development, the development of the rural financial industry has just started. Rural financial institutions have few outlets and small total deposits, which cannot provide sufficient credit funds for agricultural production. There is a big gap between the net income and savings of rural residents and urban areas and cannot play a role in promoting agricultural economic growth. While improving agricultural productivity, we should pay attention to improving farmers' living standards, expanding social security, and improving rural residents' medical care and education. This enables the development of the financial industry in rural areas to achieve self-promotion and improvement.

The innovation of the rural financial industry has the characteristics of few innovative asset products and insufficient competitive power of innovative subjects. Innovation is mainly driven by policy rather than the result of market competition. The innovation of rural financial products cannot meet the needs of the current agricultural economic reform and farmers' investment and does not meet the inherent requirements of the market economy, resulting in high costs and low efficiency. The innovation of rural financial products should take the development of the agricultural economy as the starting point, and the financial products launched conform to the characteristics of high investment and high risk of the agricultural economy. In the process of continuing marketization of interest rates, agricultural financial products should not only cover the risks of agricultural production but also consider the needs of supporting agriculture. It is necessary to fully meet the requirements of capital owners, financial intermediaries, and capital users for risk transfer and investment profit, and to promote the reform and development of the agricultural economy and industry.

5. Conclusion

Only under a sound financial system can institutions and individuals use funds rationally. It takes advantage of the local advantages to improve the local agricultural production infrastructure, so as to carry out large-scale, mechanized, and efficient agricultural production in the local area. This paper forecasts the rural financial industry and puts forward some suggestions for the development of rural finance. In this paper, preliminary prediction research is carried out, and there are inevitably some omissions in the research. The analysis of the state evaluation level is not detailed enough, only showing changes in the relevant indicators and no internal evaluation analysis. At the theoretical research stage, the concept of the theory is not deep enough. Some technical analysis indicators, such as relative strength indicators and moving averages, can be used as input variables for PCA algorithm dimensionality reduction to improve forecast accuracy and shorten training time.

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 no conflicts of interest.

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