

Strategies for Analyzing Financial Data of Listed Companies Based on Data Mining

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Abstract

INTRODUCTION: A company's net profit is a significant factor in measuring whether the company is performing well or not. How to improve the company's return on assets, strengthen the company's operations, improve the company's capital structure, enhance the company's marketing strength, and accelerate the company's financing speed is an inevitable choice for the company to avoid falling into a financial crisis.

OBJECTIVES: Forecasting the financial crisis of listed companies based on the financial situation of selected listed companies.

METHODS: The return on assets, shareholders' equity ratio, return on net worth and other company factors have been studied empirically using data mining techniques. A mathematical model for financial risk identification was developed and evaluated.

RESULTS: The results show that the accuracy is above 90%.

CONCLUSION: The study found that the lower the return on capital, the higher the financial risk the firm faces; the lower the financial debt ratio, the higher the chance of financial difficulties, and the two are positively correlated.

Keywords: data mining, financial analysis, cluster analysis

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1 Introduction

Due to the rapid development of China's economy, society, and especially the financial field, China's securities companies will encounter more risks and higher financial crises in the future. Therefore, investors must predict whether a financial crisis will occur at listed companies.

In foreign countries, a lot of research has been conducted on the financial risks of listed companies, mainly to discover a company's financial risks. The academic community has conducted extensive research on companies' financial risks, an essential topic in the current financial field. The current financial risk early warning theory in China is divided into two parts: the first part defines the financial risks that occur in a company.

Therefore, in our country, a series of financial risks appear in our financial market and reflect our financial risks to a certain extent.

2 Research Background

In the operation of enterprises, opportunities and dangers coexist, and the biggest problem is the emergence of economic difficulties or even the verge of collapse. The development and construction of China's capital market have been perfected, as have the financial risks faced by China's enterprises. The causes are mainly the global economic downturn in general, changes in the business environment, changes in national macro-control policies, frequent changes in accounting standards, and many other factors that have had a particular impact on the business performance of enterprises, but the root cause is still the enterprise itself. At the same time, comparing the

performance of different companies also enables them to understand better their position in their industry and even among all companies. In this paper, based on the financial data published by listed companies in China, three leading financial indicators are selected: the composition of assets, that is, the ratio of long-term debt to equity; the repayment capacity of liabilities is the ratio of liquidity to velocity; the level of profit is what is commonly referred to as the interest rate, that is, net sales margin; and the return on equity is what is commonly referred to as the weighted sum of return on assets and owners; the operating activity of the enterprise is the enterprise's receivable account turnover, inventory turnover, and turnover rate; the company's growth rate is the growth rate of earnings per share, net profit growth rate, and net profit growth rate.

According to the financial situation of a part of the listed companies, the BP neural network method is applied to predict the financial crisis of the listed companies and their financial crisis is analyzed empirically [1]. In this paper, the return on assets, shareholders' equity ratio, return on net assets, and other company factors were studied empirically using data mining techniques with ST as the variables. A mathematical model for financial risk identification was developed and evaluated, and the results showed that its accuracy was above 90%. It was found that: the lower the return on capital of a company, the greater the financial risk faced by the company; the lower the financial debt ratio of a company, the higher the chance of its financial difficulties, and the two show a positive correlation; if the change in the return on shareholders' equity is small, it indicates that the company is financially stable and has sound operations; the net profit of a company is a significant factor to measure whether the company's performance is good, how to improve the return on assets of a company, strengthen company's operations, improve the company's capital structure, enhance the company's marketing strength, and speed up the company's financing, which are inevitable choices for the company to avoid falling into financial crisis [2].

While the company's profitability level determines its effectiveness and performance, this paper uses the return on capital as a measure of the company's operational performance.

Currently, the financial statements of many large companies or groups in China still need to be performed manually or by using some financial software to analyze them. However, the financial analysis conducted manually has the following drawbacks:

1. Due to the backward technology, the analysis reports and forms are still the same, which cannot meet the needs of leaders at all levels and the development needs of enterprises.
2. The conclusions of financial analysis are generally made within a specific time frame and have no continuity. It is not possible to make a dynamic response to a problem.

3. The workload is large, the response speed is slow, and the timeliness could be more robust.

4. The scope of analysis is small, and conducting a comprehensive analysis with other company departments (such as sales, production, personnel, etc.) is impossible. However, with today's rapid development of information technology, financial analysis conducted manually is increasingly unable to meet the requirements of company development [3]. The American CPA published a survey called "Improving Corporate Reporting: Customer Orientation", stating that users' demands and the company can provide the following:

1. Financial and financial information
2. Business executives conduct statistical analysis of financial and non-financial data
3. forward-looking information (including forecasts, decisions, and ideas).
4. information on the shares and executives of the company.
5. Information about the company

However, the manual process of disclosing this information must be completed, labour- and financial-intensive, and generates a degree of noise interference. Therefore, there is a pressing need for a simple way to extract valuable data from a large and complex information flow. Understanding large, complex, and information-rich data is a universal need in business, science, engineering, economics, and other fields, and in today's competitive society, we absorb and use the valuable information behind that information. In the course of a company's development, as the number of stakeholders grows, so does the amount of information available about the company, and in this regard, financial statements are the best way to do so. Every company has a vast amount of financial information, so how do you organize it into the needed data, solve the irregularities and the hidden information, and how do you parse it effectively? Today, with the development of information technology and the explosion of information in various industrial fields, the potential for data mining is becoming increasingly evident, so the effective development and application of various complex data sets have become a hot topic of current research [4].

3. Materials and Methods

3.1 Definition of Data Mining

Data mining is extracting information and knowledge hidden and undiscovered but with potential from large, incomplete, noisy, fuzzy, and random accurate data. The field involves machine science, pattern recognition, statistics, artificial intelligence, database management, and data display [5]. The concept encompasses the following multiple dimensions: The source of information is authentic, substantial, and noise-containing; information is found meaningful to the user; there is an acceptable, understandable, and applicable understanding; this understanding has specific prerequisites and

limitations and is practical within certain limits. In conclusion, data mining technology is a new technology that can discover valuable information from vast data. In Figure 1, it can be seen that.

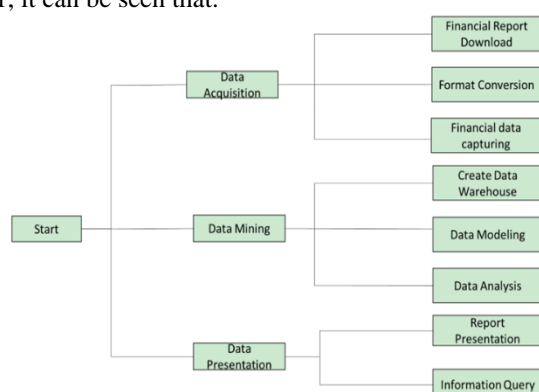


Figure 1: System functional module diagram

The 2015 annual reports were selected as the object of study, with a total of 63 companies included in the delisting warning, corresponding to the corresponding number of companies with good financial status but not receiving special treatment or delisting warnings. Since companies' annual reports are generally published from the beginning of the following year until April 30, if a company is in danger of exiting during this period, it indicates a significant financial crisis in the past financial period [6].

In selecting variables, the commonly used indicators of financial proportions are asset structure, operating capacity, solvency, growth, and profitability. The information in the following experiments has been normalized to avoid errors due to limiting values and other factors.

3.2 Functions of Data Mining

(1) Description. A concept description is the meaning of a thing, which is to summarize the relevant characteristics of such a thing. This is done so we can understand the information better and use other characteristics more readily.

(2) Categorization by category: by looking at similar objects, characteristics with the same properties and those with differences can be found and categorized. The characteristics are studied by analyzing the training set and using its characteristics to predict and categorize the uncategorized information. Its main algorithms are decision-based judgment and memory-based inference.

(3) A cluster (collection) groups the closer ones in a large amount of information without any special pre-arrangement or requirement. It is classified based on distance and similarity [7].

(4) Correlation. Data relevance is a type of knowledge that is identifiable and significant. Data mining can uncover relevant information related to events and thus reveal the web of relationships hidden in the data.

(5) Data mining can produce forward-looking information by analyzing past and present data. Various analysis tools,

such as correlation analysis, regression analysis, time series analysis, ANN analysis, etc., are used.

3.3 Application Prospects of Data Mining

These four requirements are necessary for data mining to be effective and efficient. The four essential elements are 1) a clearly defined problem; 2) potentially valuable information; 3) information that will be embedded in the information; and 4) an increased processing cost of data compared to the potential knowledge obtained using data mining techniques [8]. In data mining, the most effective method is to correctly select the data sources, select the data, and master its form. Today, with the development of information technology and the explosion of information in various industrial fields, the potential for data mining is becoming more and more prominent; therefore, the effective development and application of various complex data has become a hot topic of current research, as shown in Figure 2.

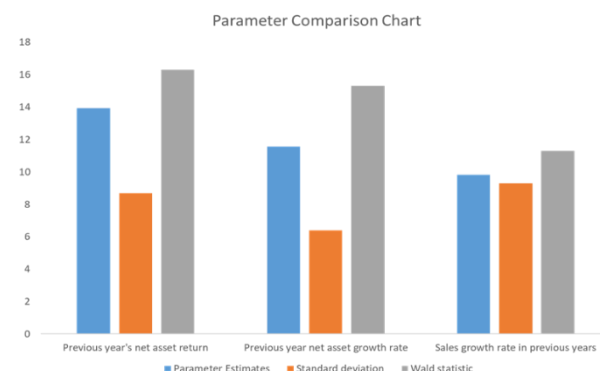


Figure 2: System functional module diagram

3.4 The necessity of data mining technology applied in financial analysis

In China, due to the development of our financial system, the financial management of our enterprises has stepped into the development stage of the Internet, so the accounting information resources of our enterprises are also increasing at a speedy rate. Since the users of financial analysis have an increasing demand for financial analysis, conventional financial analysis can no longer adapt to users' needs in the face of a considerable amount of financial data [9].

1. It is beneficial to improve the efficiency of enterprises in using financial information. Financial information is sequentially arranged and multi-dimensional. However, since traditional financial data is only a kind of OLTP based on the actual, which is mainly oriented to the actual business, it needs more data analysis. Therefore, data mining technology can well integrate the multidimensional characteristics of financial information, thus enhancing its use for the financial information of enterprises.

2. It is conducive to solving the noise problems concerning enterprises in finance. With the development of Internet technology, people can easily access all kinds of information from inside and outside the company. Still, the large amount of information makes its authenticity and credibility very low. Data mining can distinguish, extract, convert, organize, and mine the information needed for financial analysis of enterprises from a large amount of data, thus effectively avoiding and reducing the noise of financial information about enterprises.

3. It is conducive to meeting the needs of enterprises for financial information technology. Due to the increasingly complex business situation, the process of financial analysis will inevitably be interfered with by human factors, making the previous statistical methods too programmatic, mechanical, and challenging to adapt to diversification needs. On the other hand, data mining can use existing information to obtain new and valuable information, thus achieving automatic learning of information and thus meeting the intelligent requirements for finance.

Bad faith M&A is an M&A that is carried out without the knowledge or consent of the acquiree. Malicious M&A is the acquisition of control of a target company by the acquiring company's stock if its management is unaware of or unwilling to collaborate with it. Examining the positive and negative effects of a hostile M&A makes it possible to determine whether it should be allowed to implement an anti-M&A.

The primary function of a hostile merger is the external management of the firm. The buyer of a hostile M&A usually bypasses the company's management and negotiates with its holding company's controlling shareholder. Usually, after the completion of the M&A, the acquiring company will reorganize the board of directors of the company and appoint new managers to take complete control of the company's finances and personnel, so the pressure of a hostile M&A will force the board of directors and managers of the company to improve their work to achieve the maximum benefit and also not to be acquired in bad faith. In addition, corporate mergers can bring synergy and economies of scale between firms; when two or more firms merge, their operations, management, and finances can be integrated and collaborative in all aspects. (ii) Although there is no cooperation from the management of the acquired target, there are also specific synergies and economies of scale after the merger.

However, although most American legal economics and finance scholars have expressed positive opinions about the positive effects of hostile M&A, there is scepticism in academic and practical circles. First, a hostile merger is not necessarily the result of poor managerial management; well-run firms are also attacked, and the managers of the merger target are to be sufficiently responsible for improving their operational performance. Secondly, the cost to the acquirer is not in the synergies and economies of scale of the firm but in the benefits of passing assets from shareholders, creditors, and employees to the

shareholders of the firm; there are also mergers and acquisitions where the company is often paid a hefty price, and once the acquisition is completed, the company is broken up and sold at a higher price. Now, a hostile takeover is about making profits from the acquiring firm. Third, the expanding scope of operations of the M&A company makes it difficult to supervise effectively, and the corporate governance structure of the M&A company itself can also be affected.

An unsound governance structure of the company will have a significant impact on the healthy development of the company, and it will also lead to the inability to implement the internal control system of the company effectively. Thirdly, the unreasonable shareholding structure and unreasonable board structure of the company make the property rights structure of the company unreasonable and do not form a set of adequate supervision and investment decisions, thus causing the monopoly of significant shareholders and some managers. To solve these three major problems, we must start by strengthening the constraints on the valuation of the underlying, the regulation of goodwill impairment and information disclosure, and the regulation of performance commitment. At the same time, companies must be pushed to improve their management, enhance investors' legal awareness, strengthen supervision and management, and implement precise crackdowns by establishing a sound market system. Through the optimization of the company's internal supervision mechanism and the optimization of equity, the optimization of the company's internal control mechanism and equity structure is the main problem facing domestic companies. Chinese companies can only achieve sustainable and healthy development through sound corporate governance based on deepening the socialist market economy system.

3.5 Data mining model analysis

By analyzing the model, a lot of profiling information is obtained, which enhances the correctness of the model and the in-depth study of it. First, the most basic measure of a company's financial problems is determining whether it is subject to financial problems and then statistically and descriptively describing the link between it and the financial environment [10].

The models were selected to test their accuracy and stability [11]. The appropriate model estimation is selected in the modelling process, and the information collected is linked to the sample cases and tested. As a rule, the complexity and accuracy of the modelling are taken into account, and the accuracy of the modelling also depends on the available information and the environment in which it is performed [12]. Since the information used in this thesis is small and the calculations' results are contingent, better modelling can be done when there is enough information to derive more confidence. As for the type of model, it needs to be identified under different tests and estimations, from which the best model is

selected and then analyzed and forecasted using the model constructed. In modelling, the data were classified and categorized into positive, neutral, and negative types based on the textual characteristics of the data using the simple Bayesian method.

Based on this first element, the thesis constructed a mathematical model of the system using three methods: decision tree, logistic regression, and neural network.

Before modelling, the original information needs to be pre-set because the original information contains a large amount of information, and there is no relationship between the number of training sets and the number of calibration sets. A stratified random sampling method was used to classify the validation and training sets by 25% and 75%, respectively, using the industry to which they belong as the hierarchy. The ST model was simulated using the decision tree, logic, and BP neural network models.

In the modelling process, input variables were selected as much as possible to improve the applicability of the modelling and to keep the "true" data. Since more variables contain information that intersects with each other, variables that contain most of the information are selected while excluding variables that intersect or have multiple co-linearities. The selection of parameters according to the chi-square value method excludes interference with binary variables. In Figure 3, the results of the described processing are shown.

The data mining technique uses as many input variables as possible to improve the model's fit and preserve "true" information. Since more variables contain overlapping information, those that contain the most information are selected, while redundant variables with overlapping information or multicollinearity are rejected. The variables are selected based on the chi-square method, thus eliminating the effect of the target variable being a binary variable. The results of the treatment are shown in Figure 3.

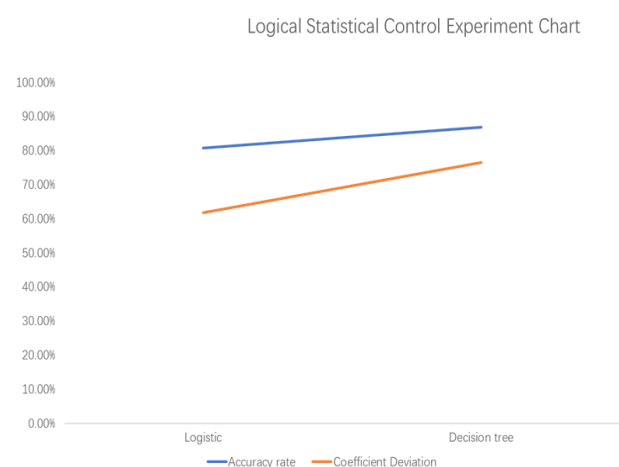


Figure 3: Graph of the logistic statistical control experiment

As seen in Figure 3, the analysis of the data obtained from logistic regression and ID3 decision tree methods shows

that it is practical to use data mining methods for the return on the company's net worth, with an accuracy of more than 80% [13]. The experiments showed that forecasting using decision trees was better than logistic regression. Both methods have a high chance of predicting the future return on net worth, which is much more accurate than the previous methods that relied only on qualitative methods.

The return on total assets, or the net worth, should be considered an input variable when it exceeds a critical point; the other components are rejected because they correspond to too few X2s. Although the method has high discriminative power, its computational and operation speeds are slow, which is not conducive to engineering practice. And the model selection is limited by the traditional linear regression model, which makes the model's fit unsatisfactory. Since each parameter in the model has a high correlation, multiple co-linear problems will arise, which will negatively affect the effect of regression analysis. The conclusion of the regression analysis was drawn by analyzing the non-significant factors using progressive approximation regression analysis.

3.6 Establishment of multidimensional data

This paper categorizes the multidimensional information in this paper, which includes a comparison with the experimental model. The database used in this experiment mainly uses multidimensional models, such as the star and snowball models. A star schema radiates from a point at the centre of a circumference along a circle connected to multiple objects. This intermediate object, a 'fact table', stores measured properties in multiple dimensional architectures [14].

The proof problem has unique solutions; only some of these solutions are not zero, and their corresponding samples are the support vectors (SV). The sample corresponding to the Kuhn-Tucker condition is the support vector (SV). According to the Kuhn-Tucker condition,

In this paper, we use the linear and Gaussian kernel functions to model the best results online. In this paper, we use a linear kernel function with a Gaussian kernel function for modelling, and multiple externally linked objects called dimensional meters are used to construct dimensions in a multidimensional space. By combining the interrogation of fact tables and dimension tables, you can obtain any data from a fact table [15]. The "snowflake" pattern is an extension of the "snowflake" pattern, where some of the "snow" is not directly connected to the "fact. The "snowflake" model is an extension of the "snowflake" model, in which some "snow" is not directly connected to "facts", but to "data" and "data". The advantage is that it minimizes the data storage rate and combines more standardized tables, thus increasing the efficiency of the system query. The

snowflake model adds more flexibility to your application.

Based on this, this paper uses the form of a star diagram when building the data warehouse to ensure the model's scalability. When conducting analysis, different dimensions should be reasonably classified according to the business's logic and the customers' requirements to achieve better service requirements, which can be seen in Figure 4.

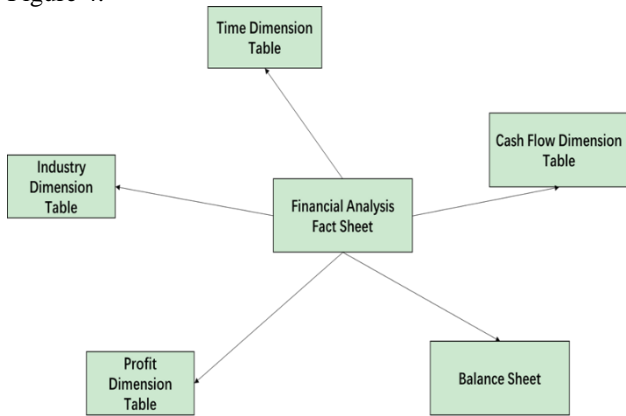


Figure 4: System data model

Results and Discussion

4.1 Design and establishment of the system data warehouse

In planning data warehousing, it is necessary to analyze and organize the business data and study the corresponding fields accordingly. The modelling should be carried out with attention to the role of the model design on the database and give full play to its characteristics once the system's performance has been optimized. Different model construction techniques should be used to optimize the parameters of the constructed model using the actual situation in the database and database characteristics to obtain optimal results [16].

When constructing the entity model, the storage structure, indexing strategy, storage location, storage allocation, etc., are further decided based on the logical schema for a particular database. Different schemas have specific requirements for the input data, and to meet the modelling needs, the raw data must be characterized and processed. In data processing and feature extraction, meaningful features should be selected as much as possible because the more information obtained in the initial stage, the more information is required. Based on this, our design process will follow the following basic principles:

(1) Adopt a star-shaped structure for the data warehouse. Most data is loaded at once in the data warehouse, and it isn't easy to interpolate and upgrade afterwards. It also requires a large amount of data information. It uses a large number of data models, which are not only difficult to understand by the users but also affect their retrieval

speed. Therefore, a simple star structure is used for data design.

(2) Ensuring the integrity of the primary and external keyword references in the fact and dimension tables ensures their genuine and authentic interrelationship in the repository [17].

(3) Making full use of the index can increase the speed of retrieval because of the many retrieval operations that need to be performed. In addition, when loading data from the repository to the repository, the index can be removed and added to the repository for better data loading performance to ensure proper working. The fact table, which mainly includes the unique identification and primary measurement of each dimension, including profitability, quality of earnings, solvency, operational capacity, and growth capacity, is shown in Figure 5.

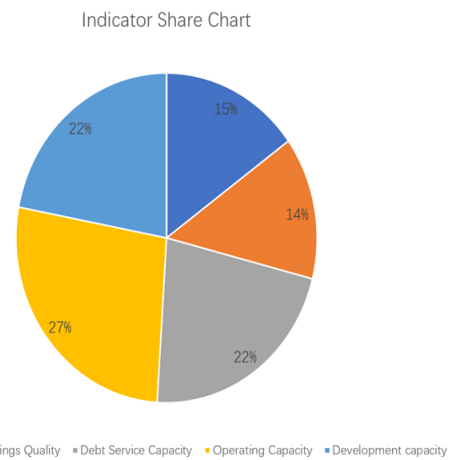


Figure 5: Indicator share chart

4.2 Strategies for analyzing financial data in data mining

The profit dimension table, a report of a company's production and operation in a certain period, reflects the company's profitability, which is also called an income statement. Its core parts include profit, total profit, operating income, cost, total expense, income tax, net sales margin, operating margin, interest coverage multiple, net profit growth rate, etc.

The statement of cash flows is the effect of each account in a company's financial statements on the increase or decrease of the company's total cash in a specific period. Its core areas include cash flow statement ID, cash flow from operating activities, cash flow from investing activities, cash flow from financing activities, cash ratio of earnings, sales revenue ratio, cash recovery rate, cash flow ratio, etc. [18].

The balance sheet is the position of the company's liabilities, assets, and owners' assets in a given period. The financial position of a company can be seen from its financial position. These areas include Balance Sheet ID, Total Assets, Total Liabilities, Total Owner's Equity, Net Working Capital, Current Ratio, Quick Ratio, Gearing

Ratio, Accounts Receivable Turnover, Asset Growth Rate, Net Interest on Assets, etc., as shown in Figure 6.

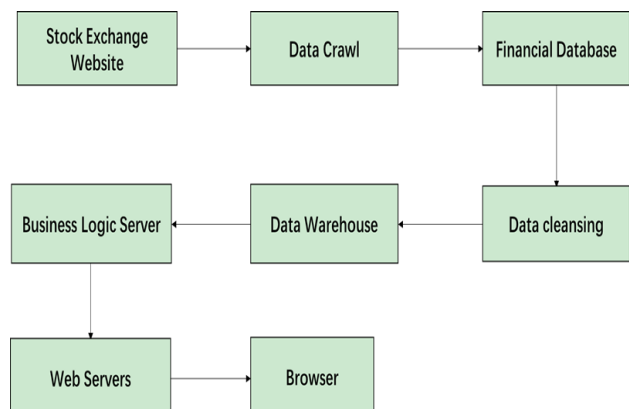


Figure 6: System percentage diagram

Concerning Figure 6, the selection of variables is mainly based on five aspects: profitability, earnings quality, solvency, operating capacity, and development capacity. This paper mainly selects the logistic regression model and the decision tree algorithm model for comparison experiments. The model-building process for both algorithms is as follows: [19].

In the logistic regression model, the variable terms were selected by the post-order selection method, which is the process of including all the independent variables that do not satisfy the conditions and excluding those that do not satisfy the conditions one by one, as follows:

- (1) Inputting all the variables into a determined model
- (2) Performing a Wald test on each variable to obtain the corresponding P value.
- (3) Find the feature with the maximum p, which will be excluded if it exceeds the determined significance level.
- (4) Return to (2) and perform the deletion operation.

In the decision tree algorithm, the company's future investment is to be evaluated, and its focus is on the prognosis of the future return on net assets.

In the logistic regression model, the variable terms are selected by the post-order selection method, which includes all the independent variables that do not satisfy the conditions and excludes the independent variables that do not satisfy the conditions one by one.

- (1) Inputting all the variables into a determined model
- (2) Performing a Wald test on each variable to obtain the corresponding P value.
- (3) Find the feature with the maximum p, which will be excluded if it exceeds the determined significance level.
- (4) Return to (2) and perform the deletion operation.

The results show a decision tree for evaluating a company's return on net worth for one year that to assist in making investment decisions.

4.3 Data Mining System Flow

We used logistic regression and decision tree methods to implement the comparison experiment. The model used the financial information of the company obtained from

the official website of the stock market, with the 2007-2011 annual performance as the independent variable and the 2012 annual net profit as the dependent variable, and a 2012 annual net profit growth rate of no less than 15%. The annual reports for 2008-2012 and the return on capital for 2013 were used as factors and as a validation of the previous training set, as shown in Figure 7.

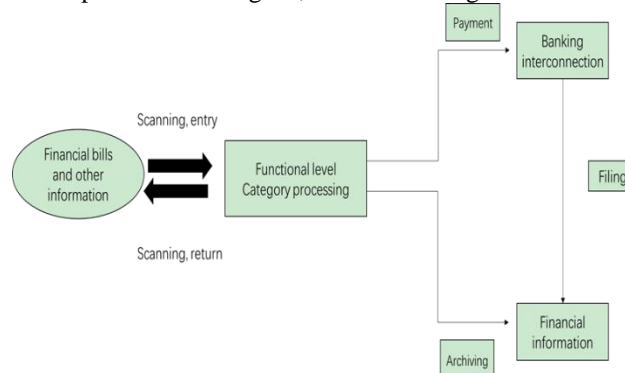


Figure 7: Image structure analysis diagram

As for the decision tree algorithm, the following valuable rules were mainly derived from the construction of the training set of financial data for listed companies:

- 1.If the net interest rate in the current year is above 25%, then the return on capital in the following year will be greater than 90%.
- 2.If the net interest rate for the current year is above 25% and the net interest rate is above 45%, then the return per share for that year is above 80%.
- 3.If the net interest rate for the current year is below 25% and the net income increase is below 45%, while the sales increase is above 60%, then it is around 75%.

The analysis by logistic regression and the ID3 decision tree method shows that data mining techniques for forecasting the company's return on net assets are feasible and accurate at more than 80%. From the perspective of the study, the decision tree-based method is better than the logistic regression method on this basis. Both methods have a high chance of predicting the future return on net worth, and their accuracy is greatly improved compared with the previous method, which relies only on qualitative aspects. And there are some differences between some data and indicators in the annual reports of some companies, which can affect the sampling results to different degrees, and this is what some future research work will do. The results show that the method can unite better forecasting effects and assessment indices and better reflect the dynamic changes of information than a single model [20-22], as shown in Figure 8.

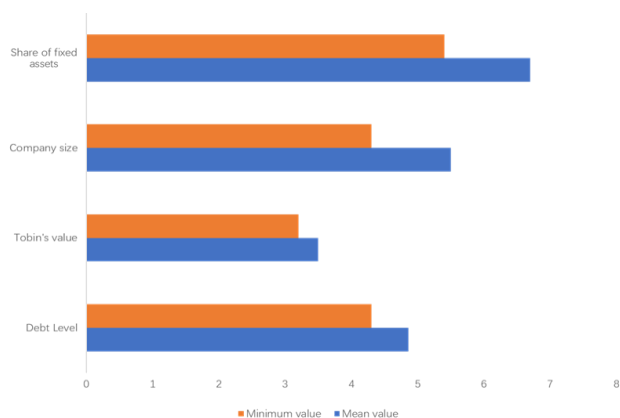


Figure 8: Plot of the Special Value Analysis

This thesis focuses on the impact of SVM on financial crises. The results show that the support vector machine's prediction accuracy depends on its model's parameter settings. Overall, the support vector machine model provides accurate forecasts of financial crises for companies and helps guide their decision-making. A company's financial risks can be more accurately determined by using an appropriate model, which can effectively improve the effectiveness and accuracy of corporate decision-making. But this method still needs some help. For example, the accuracy of the support vector machine's recognition depends on how the parameters are chosen. Even though there are many ways to find the best parameters, some problems will likely lead to a model that needs to be closer, reducing the financial statements of the modal months and leaving out the accounting information from other years. The selected sampling will also bring some bias into the results. In addition, although the selected financial issues were selected according to the general financial indices, other appropriate financial indices still needed to be selected, leading to a computational bias that affects the model's predictive power.

In addition, although the selected variables follow the selection rules of general financial indices to deal with financial problems, other appropriate financial indices are not selected for the variables, resulting in biased results that need to be improved again.

5 Conclusion

Due to the slow development of our country, our companies have become increasingly competitive in the market, and many companies have suffered severe financial problems and have been "delisted" by the stock exchange. Due to the relative maturity of China's stock trading system, the system is relatively backward. In the current period of rapid development, the stock trading exit mechanism is a crucial link to improving the stock trading system, which has a very significant role in improving the financial situation of listed companies and the company's financial environment. However, in the 15 years since the exit mechanism was officially implemented, only 33 companies have exited. Therefore, the exit risk warning

for Chinese stocks is seen more as a financial crisis signal. Therefore, using financial information to establish an effective and stable financial risk early warning system has a very significant guiding role in companies' financial decision-making and financial risk management. The simulation test results show that the method can better predict and forecast the company's business performance and can improve the company's forecasting ability to better deal with the company's financial problems. This paper introduces factors such as the size, performance, and capital structure of a company into its accounting information, thus significantly improving the accuracy of the financial risk measure of the company.

In recent years, there have been many theories and techniques regarding the judgment and forecasting of significant financial risks that arise in the financial fields of companies.

The main financial risk identification models of the company are derived by analyzing the return on assets, shareholders' equity ratio, and return on net assets of a company.

The return on assets is an essential indicator of a company's profitability. The analysis shows that its factor is negative, so companies with better overall economic capacity have more significant financial risk, while weaker companies have lower economic risk. The lower the return on assets of a firm, the more significant its financial risk. Therefore, to get out of financial difficulties, it is necessary to improve the level of return on assets and improve management.

Second, the equity ratio is an essential factor in measuring the composition of a company's assets. The company is responsible for the interests of the company's shareholders, the essence of which is the company's strength, the ability to withstand risks, and the expansion of business scope. In the logistic regression of financial risk identification, the factor of this index is negative, indicating that the lower the financial debt ratio of the company, the higher the chance of financial distress for the company, and the two show a positive correlation.

Third, an essential characteristic of a company with exceptional operations is a higher return on net assets. If a company is financially sound and has a healthy operating performance, then this index is very smooth. So this index plays a critical role in judging the financial status of a company.

Fourth, net profit on sales is a significant indicator of a company's profitability. An empirical study was conducted on the above three models, and the results showed that the risk appetite index of a firm could be a significant factor in measuring whether a firm has financial risks. Therefore, companies' importance to marketing can be seen in their actual operations. It is an effective way for companies to achieve capital turnover, make profits, and reward their stakeholders.

The effectiveness and performance of the company are determined by its degree of profitability, so this paper uses the return on capital as a measure of the company's operational performance.

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