The Construction and Evaluation of a Fuzzy Warning System in Financial Distress

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ABSTRACT

Even the transport business conditions of companies should be described clearly and periodically in financial report forms, investors of a company could not be forewarned about the existence of the finance crisis of a fraud company. Besides, lots of non-financial information has been confirmed relevant to the predictions of finance crises of enterprises in many related researches. However, non-financial factors such as stock prices and credit comments have been seldom used to judge finance crises of companies. To minimize the research scope of the study, only 72 companies of electronic and traditional industries would be examined by using 30 financial factors and 6 non-financial factors. First, principal component analysis and normalization process of data will be applied. Following that, three decision models, including feed-forward neural networks, C5.0 decision tree, and the proposed mechanism to modify C5.0 decision rules by genetic algorithm, were utilized to analyze the finance data of companies. Experimental results show that the accuracy of our system is better than that of the compared research by using principal component analysis and 6 non-financial factors of a company; in addition, the accuracy of our system of genetic decision rules is as high as 95%, which is better than both feed-forward neural networks and C5.0 decision tree. Thus, the proposed mechanism of genetic decision rules is expected to be further verified and then applied to forecast finance crises of companies to reduce the loss of investors.

Keywords : Financial Crisis Forecast System ; Feed-forward Neural Networks ; Genetic Algorithm ; Decision Tree

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