

## Bankruptcy Prediction and the Characteristics of Financial Data

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### Abstract

The phenomenon of corporate failure is not infrequent nor of minor economic consequence. In Korea, during the period 1990 to 1995, the number of bankruptcy filings increased ten times. It is obvious that such a crucial issue in corporate finance warrants careful investigation.

Bankruptcy prediction has been a major research issue in the business classification area. Recently artificial intelligence (AI) techniques such as expert system, inductive learning, and neural network are applied to the classification problem of accounting and financial area. AI techniques showed the better performance than the traditional statistical and mathematical methods. However, there were little study to explain the result why AI techniques were more useful than statistical techniques to predict the bankruptcy.

Generally statistical methods have some assumptions. This study analyzes the data characteristics to find the appropriateness of problem to the assumptions of techniques. Three kinds of classification techniques, discriminant analysis, logit, and neural networks are used, and six types of industry are used as the experimental sets having the different types of data characteristics.

This study performs the statistical tests of normality, multicollinearity, and equality of covariance to find the different characteristics of the samples. The test of Komogorov-Smirnov goodness of fit, correlation of independent variables, and equality of covariance show that the difference of samples' characteristics are statistically significant. The performances of prediction are correlated to the characteristics of samples. In the sample which satisfies the assumption of statistical methods, neural networks do not show the better performance. Otherwise the neural networks are better than two other statistical methods of discriminant analysis and logit, when the characteristics of sample violate the assumptions of statistical methods highly.