Measuring Retail Company Performance Using Credit Scoring Techniques

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Abstract

This paper proposes a theoretical framework for predicting financial distress based on Hunt's (2000) *'Resource-Advantage (R-A) Theory of Competition'*. The study focuses on the US retail market. Five credit scoring methodologies *–Naïve Bayes, Logistic Regression, Recursive Partition, Artificial Neural Network,* and *Sequential Minimal Optimization—* are used on a sample of 195 healthy companies and 51 distressed firms over different time periods from 1994 to 2002.

Analyses provide sufficient evidence that the five credit scoring methodologies have sound classification ability. In the time period of one year before financial distress, logistic regression model shows identical performance with neural network model based on the accuracy rate and shows the best performance in terms of AUROC value. Other models are slightly worse for predicting financial distress, but still present high accuracy rate and AUROC value. Moreover, the methodologies remain sound even five years prior to financial distress with classification accuracy rates above 85% and AUROC values above 0.85 for all five methodologies. This paper also shows external environment influences exist based on the naïve bayes, logistic, recursive partition and SMO models, but these influences are weak.

With regards to the model applicability, a subset of the different models is compared with Moody's rankings. It is found that both SMO and Logistic models are better than the Neural Network model in terms of similarity with Moody's ranking, with SMO being slightly better than the Logistic Model.

Keywords: Resource-Advantage (R-A) Theory of Competition, Naïve Bayes, Logistic Regression, Recursive Partition, Artificial Neural Network, and Sequential Minimal Optimization

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