ABSTRACT

This research compares the efficiency and accuracy for credit rating classification between a traditional statistical technique, Discriminant Analysis (DA), and an artificial neural network known as Learning Vector Quantization (LVQ), which is the precursor to Self-organizing Map (SOM). We give a comprehensive review of their applications and illustrate the results taking the case of China listed companies.

SOM is used in this research as a visualization tool, which demonstrates the distinctions and patterns among China listed companies into two groups. LVQ is used based on the theory of SOM with supervised learning for the classification comparing with DA. The results show that DA and LVQ have their own advantage on classification for different data sets combination and the level of Type I and Type II errors varies greatly across the techniques. It was found that LVQ has low level of Type II error and high level of Type I error while DA has the reverse relationship with high level of Type II error but low level of Type I error. We demonstrate that the performance of DA is more consistent than LVQ as we vary the size of the training and testing samples.

Keywords: Discriminant Analysis; Self-organizing Map; Learning Vector Quantization; Chinese special treatment company