Comparative Study between "Neuro-Logit" and Logistic Regression Analysis in Corporate Financial Distress Forecasting

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Abstract

The Neuro-Logit is simply one layer Artificial Neural Network (ANN), acts as Logistic Regression Analysis (Logit) and consists of two neurons (the first neuron is assessing financial distress occurrence probability and the second neuron is measuring the competence probability). Neuro-Logit model reduces most of ANN and Logit limitations. ANN and Logit are widely used as modeling methods in many business applications, particularly corporate failure prediction (Early Warning); as the last decades witnessed continuous financial crises outcropping. The sample in this research has been drawn from the available financial statements (Financial Ratio-Based Model) which belonged to most active non-financial firms in Egyptian stock markets. The observations are quarterly basis, covering six-year time span (2004-2009). The overall results show that Neuro-Logit model has superior outcome comparing to legacy Logit model; whereas the overall correct classification accuracy rate is almost 87% with Type I error rate (costly error) 10% and Type I error rate reaches 0% in classification test. But in prediction test the legacy Logit is still powerful (81.58% correct classification rate with sensitivity rate 89.47%). The research is presenting empirically an innovative modeling approach; where the ANN is used as statistical tool.

Keywords

Artificial Neural Networks, Logistic Regression Analysis and Corporate Financial Distress Prediction

Biography

Waleed E. Almonayirie is Egyptian Telecom Engineer (IEOM Society Member), he has more than fifteen-year experience in satellite communication (Technical Support, Operations and Pre-Sales) and works as VSAT Expert in Abu Dhabi, UAE. He earned B.Sc. in Electronics and Communication from Faculty of Engineering, Helwan University, Egypt. He has awarded by MIBA (Master of International Business Administration), Global Finance, ESLSCA Business School, Egypt. He is now enrolling the DBA program in Swiss Business School (SBS-UAE). His interests in Artificial Neural Networks, Pattern Recognition, Optimization, Modeling, Financial Analysis, Cryptosystems, Quantitative Finance and Management Science. He is publishing his work of the MIBA research project and the DBA dissertation (5 papers till now). This paper is based on the MIBA graduation research project.