

FINANCIAL EARLY WARNING SYSTEM MODEL BASED ON NEURAL NETWORKS , PSO AND SA ALGORITHMS

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Abstract: Predicting bankruptcy is one of the most challenging subjects and research topics in economic and financial areas especially in these last decades. Making a financial early warning systems to evaluate firms failure risk depending on their financial behavior can be a crucial key indicator for making decision . One of the most popular and performer tools to predict financial distress is Artificial Neural Network (ANN) . In this paper, a financial warning system is presented based on a hybrid ANN model to predict bankruptcy and risk scoring, This hybrid model considers the firms' behavior during three years to predict risk failure. Taking into consideration in one hand that ANN is a powerful tool to approximate non linear function if it is designed with appropriate parameters, and in the second hand, the problem of local minima, we propose a topology design algorithm based on an improved Particle swarm optimization and Simulated annealing to define an optimized ANN architecture. Taking in consideration feature selection , a sensitivity analysis is made to catch the relevance of the discriminant variables used in the proposed financial warning system. A comparative performance study is reported. The results showed that the proposed model represents a valid alternative to give an early risk failure warning .