AN INTELLIGENT SOFTWARE MODEL DESIGN FOR ESTIMATING DEPOSIT BANKS PROFITABILITY WITH SOFT COMPUTING TECHNIQUES

F. Sönmez, Ş. Bülbül†*

Abstract: Profitability of Turkish banking sector gained importance after national and international financial crisis happened in the last decade, which revealed the need to make a research on profitability and the factors determining profitability. In recent years, new techniques of soft computing (SC) like genetic algorithms (GAs), fuzzy logic (FL) and especially artificial neural networks (ANNs) have been applied into the financial domain to solve the domain issues because of their successful applications in nonlinear multivariate situations. An adaptive system was needed due to the fact that insufficient use of application software programs for SC and the fact that single software is only applicable for specific model. Furthermore, even though ANNs have been applied to many areas; little attention has been paid to estimation of bank profitability with ANNs. This article is intended to analyze and estimate the profitability of deposit banks in Turkey with an adaptive software model of ANNs which have not been previously applied for this context, comprehensively. The results from the software model, which processes the factors affecting profitability, indicate that all of the variables used have significant impacts in varying proportions on profitability and that obtained estimations achieved the targeted and acceptable performance of success. This software model is expected to provide easiness on estimating bank profitability, since giving successful estimations and not being affected by user differences. Additionally, it is aimed to construct a software model for being used in different fields of study and financial domain.

Key words: *Bank profitability, Turkish Banking Sector, soft computing techniques, artificial neural networks, multilayer perceptron, Levenberg Marquardt back propagation algorithm*

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*Ferdi Sönmez – Corressponding Author, Computer Engineering Department, Istanbul Arel University, Buyukcekmece – Istanbul, Turkey, Tel.: +902128672500/1299, E-mail: ferdisonmez@arel.edu.tr

†Şahamet Bülbül, Department of Econometrics, Marmara University, Kadıköy – Istanbul, Turkey, Tel.: +902163307777, E-mail: sbulbul@marmara.edu.tr

