

Analysis of Turkish Deposit Banking Sector with Market Basket Analysis and Genetic Algorithm

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Abstract

The paper aims to develop an integrated system with Genetic Algorithm and Market Basket Analysis to analyze the financial performance of deposit banks. Genetic Algorithm is used to discretize the banking dataset while Market Basket Analysis is used to extract rules. Sixty-seven ratios of thirteen deposit banks in the Turkish banking system currently traded on BİST are used with the proposed method. Data and ranking of 47 banks by asset sizes is acquired from The Banks Association of Turkey (BAT). The dataset covers the period between 1990-2018. Financial ratios, stock market performance and bank type are used as the dataset. A perfect positive correlation has been obtained between pairs of variables expressed below: total loans and receivables and total assets, total deposits and total assets, total deposits and total loans and receivables, total loans and total assets. A perfect negative correlation was obtained between the following variables: FC Liabilities/total liabilities, and TC liabilities/total liabilities, FC assets/total assets and TC assets/total assets. Using association rule mining to analyze Turkish banking sector, according to the case database, it is concluded that there are discernible [Net on Balance-sheet Position / Total Shareholders' Equity] characteristics of the Turkish banking sector, and a superposition relationship between [Net on Balance-sheet Position / Total Shareholders' Equity] and [Total Loans / Total Assets].

Keywords: Genetic Algorithm, Association Rule Mining, Banking Sector, Data mining

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