

ABSTRACT

Stock investment aims to achieve an optimal level of return while maintaining risk within acceptable limits. One common approach to risk reduction in portfolio diversification. This study applies cluster analysis as a stock selection strategy based on the financial performance of individual companies, allowing stocks to be grouped according to similar financial characteristics. The Fuzzy C-Means (FCM) method is employed for clustering because it provides flexibility through membership degrees, enabling stocks to belong to more than one cluster. Furthermore, the Mean-Value at Risk (Mean-VaR) approach is used to optimize portfolio weights by considering expected returns while minimizing risk measured by Value at Risk (VaR). The clustering analysis uses financial ratio data from the third quarter of 2025, consisting of Return on Assets, Debt to Equity Ratio, and Current Ratio. Stock closing prices are then utilized to construct an optimal portfolio for companies included in the IDX Bisnis-27 index that remained consistently listed during the period from April to November 2025. The stock price dataset comprises 158 observations covering the period from April 8 to November 28, 2025. The results indicate that the optimal clustering structure consists of three clusters, as evidenced by the lowest Xie-Beni index value of 0,1224002. Representative stocks from each cluster, selected based on the highest expected return, are INKP, BBCA, and BRPT. Using the Mean-VaR method, the optimal portfolio weights are 19,63% for INKP, 65,75% for BBCA, and 14,62% for BRPT. Portfolio performance evaluation using the Sharpe index yields a value of 0,168677, while the Historical Simulation VaR at a 95% confidence level for holding periods of 1, 7, and 30 days are 0,0217254, 0,0574799, and 1,189947 respectively.

Keywords: *Fuzzy C-Means, Mean-Value at Risk, Value at Risk, Indeks Sharpe, Historical Simulation*