

ABSTRACT

Investment is the activity of committing funds at present with the expectation of generating future profits. Stocks are one of the most common forms of investment in the capital market; however, stock investment carries significant risk. This risk can be mitigated through diversification by constructing a portfolio comprising a combination of various stocks. In this study, the selection of stocks for portfolio construction was conducted by grouping stocks listed in the IDX ESG Leaders Index using K-Medoids cluster analysis based on ROE, PBV, and DER ratios, validated by the Silhouette Coefficient. The stock with the highest expected return in each cluster was selected as a portfolio constituent. Investment weights were calculated based on weekly returns derived from closing price data using the Mean-Variance method to maximize the Sharpe Ratio. Based on the weight calculation, the resulting portfolio composition consists of an investment allocation of 93.885% for BBCA, 92.168% for TPIA, and a negative weight of -86.053% for UNVR. This negative weight indicates a suggested short-selling strategy on UNVR to reallocate funds to other stocks. This portfolio produced a performance with a weekly expected return of 2.445%, a risk of 6.727%, and a Sharpe Ratio of 0.34567.

Keywords: Cluster Analysis, K-Medoids, Mean-Variance, Optimal Portfolio, IDX ESG Leaders.