ABSTRACT

Grouping stocks in portfolio formation is one way to form an optimal portfolio. The K-harmonic Means Custering method is one of the cluster analysis methods that can be used for stock grouping. K-harmonic Means Custering is a clustering method with the calculation of the harmonic mean of all data points against the distance between data points and the center of the existing cluster. This study aims to group stocks based on Return On Assets (ROA), Return On Equity (ROE), and Net Profit Margin (NPM) using K-Harmonic Means Clustering and form an optimal stock portfolio by minimizing risk using Mean-Semivariance. The data used is daily stock return data on the SRI-KEHATI Index for the period June 03, 2024 to January 24, 2025. The results of research using K-Harmonic Means Clustering based on silhouette coefficient validation, the optimal number of clusters is 3. Cluster 3 has a negative expected return, so it is not included in portfolio formation. Optimal portfolio formation using Mean-Semivariance results in a BBCA stock weight of 94.73514%, and a DSNG stock weight of 5.26485%. The Value at Risk (VaR) value which shows the possibility of risk that will be obtained by investors calculated using Historical Simulation obtained VaR values at a 95% confidence level with a holding period of 1, 10, and 30 days, respectively, namely 2.264693%, 7.161588%, and 12.40423%.

Keywords: *Optimal Portfolio, Clustering, K-Harmonic Means, Silhouette Coefficient, Mean-Semivariance, Value at Risk*