ABSTRACT

Stocks are one of the most popular investment instruments among the public due to their potential to provide high returns. When making stock investments, investors seek to maximize profits while minimizing risk. However, the possibility of high returns is generally accompanied by high risks. Optimal portfolio formation is one approach to reducing risk to a minimum. This research employs Partitioning Around Medoids (PAM) cluster analysis, which is more robust to outliers, to group LQ45 stocks based on Return on Equity (ROE), Net Profit Margin (NPM), and Earnings Per Share (EPS). These three indicators reflect a company's profitability and financial health. The clustering results are validated using the Silhouette Coefficient to determine the optimal number of clusters. A representative stock is selected from each cluster to construct an optimal portfolio using the Mean-Semivariance method, an extension of the Mean-Variance model that does not require the assumption of normally distributed returns. The performance of the constructed portfolio is evaluated using the Sharpe index. Based on the clustering analysis, three stocks with the highest expected returns were selected as representatives of their respective clusters i.e. ACES, BRIS, and UNTR. The optimal investment weight allocation for each stock is ACES (19,62%), BRIS (33,84%), and UNTR (46,54%). The Sharpe index value of the portfolio is 0,05846, indicating positive performance and providing returns than risk-free investments.

Keywords: *Cluster Analysis, PAM, LQ45, Portfolio, Mean-Semivariance, Sharpe Index*