

ABSTRACT

Investment is planting some funds to get profit. Stock investment is one of the type of investment that the most interested for investors. Investors need to group stocks before investing to find out which stocks can provide maximum profit. Clustering analysis is a data analysis that aims to determine a group of data based on their similarity of characteristics. The purpose of this research is to determine the optimal portfolio of IDX30 stocks based on the Cluster that has been formed based on the profitability ratios of Return On Equity (ROE) and Return On Assets (ROA). In this research, the Cluster formation method used is Fuzzy C-Means Clustering. Fuzzy C-Means Clustering is a grouping technique by selecting cluster members based on membership values. Silhouette Coefficient value is used to determine the optimal number of Clusters. The next process is the formation of an optimal portfolio for each Cluster that has been formed using the Capital Asset Pricing Model (CAPM) method by measuring portfolio performance using the Sharpe Ratio. The Capital Asset Pricing Model (CAPM) is a model that describes the relationship between risk and expected return, in this model the expected asset is the risk free rate plus a premium based on the systematic risk of assets. The results showed that the formation of the IDX30 Cluster with Fuzzy C-Means obtained the optimal Cluster of three. Furthermore, the optimal portfolio formed by the Capital Asset Pricing Model (CAPM) method is in Cluster 2 based on the evaluation of the Sharpe Ratio portfolio performance which has an investment weight of 28.10% to ICBP, 27.77% to KLBF and 44.13% to TLKM with the expected return to be obtained is 0.000901 and the risk is 0.050566.

Keywords: IDX30, Clustering, Fuzzy C-Means, Silhouette Coefficient, Portfolio, Capital Asset Pricing Model (CAPM), Sharpe Ratio