

## **Abstract**

**Stock transaction participants often have difficulty in determining the right time to buy or sell shares. This is because the time to buy shares can determine the investment returns on a stock. Therefore, a stock portfolio is needed that can diversify stock prices so that it can help buyers and sellers of shares in transacting in the capital market. This study discusses the making of a stock portfolio through a stock price curve clustering derived from the cubic spline method. Cubic spline to interpret data that has been reduced. The clustering method in this study was used to classify the cubic-spline coefficient and produce 2, 3, and 4 stock clustering whose classification is used by the K-means method. Next is the establishment of a stock portfolio by choosing one representative from each clustering based on the average return of each stock. This study produces a portfolio with the lowest risk value for the distribution of clusters into 4 clusters of 0.0598 when compared to the division of clusters into 2 clusters of 0.1049 and 3 clusters of 0.2396.**

**Keywords: portfolio, stock, cubic-spline, k-means, clustering**