## ABSTRACT

Investment refers to the allocation of funds into financial assets, including stocks, with the objective of increasing future value. To reduce potential losses, investors apply diversification strategies in portfolio construction. This study aims to optimize stock portfolio formation within the IDXESGL index, which consists of 30 stocks, by combining the Partitioning Around Medoids (PAM) clustering method and multiobjective optimization. Stock clustering was conducted using 2024 financial ratio data Return on Assets (ROA), Earnings per Share (EPS), and Debt to Equity Ratio (DER) as indicators of fundamental performance, while considering the presence of outliers. Portfolio optimization then employed daily closing price data from June 20 to November 30, 2025. The multi-objective approach was applied to balance expected return and risk according to investor preferences, and portfolio risk was measured using Value at Risk (VaR) with the Historical Simulation method. The results show that PAM produced three optimal clusters with higher silhouette coefficient. Based on expected return calculations, MAPA and BBNI were selected as representatives of Cluster 1 and Cluster 2, while Cluster 3 was excluded due to its negative expected return. Under the risk seeker condition (K = 0,5), the portfolio was dominated by MAPA 0,939 and BBNI 0,061, generating the highest expected return of 0,001155026 and a 1-day VaR of −4,9182%. For risk neutral investors ($1 \leq K \leq 100$), portfolio weights became more balanced, yielding an average expected return of 0,000617052 and a 1-day VaR ranging from −3,0614% to −2,2197%. Under the risk averter condition ($K > 100$), the portfolio was dominated by BBNI 0,759 and MAPA 0,241, producing an expected return of 0,000534355 and a convergent 1-day VaR of −2,218%. These findings indicate that integrating PAM clustering and multi-objective optimization generates an IDXESGL portfolio adaptable to different investor risk preferences.



**Keywords**: Investment, Portfolio, IDXESGL, Partitioning Around *Medoid*s (PAM), Multiobjective Optimization, Value at Risk.