

ABSTRACT

Optimal investment decision-making is a challenge for investors in managing portfolio risk and return. Stock portfolio diversification requires the selection of appropriate securities to control risk effectively. This study aims to determine the optimal securities from the Bisnis-27 index for the period from 1 October 2019 – 1 September 2024, using the Partitioning Around Medoids (PAM) method for stock clustering and portfolio optimization with the Kataoka Safety-First approach, which considers the minimum safe return level for investors. The results indicate an optimal portfolio composition with weight allocations of ADRO (22.82%), AMRT (51.81%), BRIS (9.24%), and CTRA (16.11%). This portfolio yields an expected return of 0.0190 with a return standard deviation of 0.0875, a minimum return level of -0.1090, and a Value at Risk of 19.51%. These findings suggest that the portfolio effectively controls risk by considering the probability of achieving the minimum return target. The advantage of the Kataoka Safety-First method over conventional approaches lies in its ability to adjust risk levels according to investor preferences, making it a more realistic portfolio management strategy. Thus, this study contributes to the development of more adaptive risk-based investment strategies. The combination of Kataoka Safety-First optimization and the PAM clustering method offers an effective approach for investors in constructing an optimal portfolio aligned with their risk profile.

Keywords: *Portfolio optimization, Partitioning Around Medoids, Kataoka Safety-First, Value at Risk.*