ABSTRACT

This thesis aims to develop a multi-objective optimization framework that combines Markowitz mean-variance model (MV model), Konno and Yamazaki absolute mean deviation portfolio optimization model (MAD model), and Value at Risk (VAR) model. The combination of these models in this study aims to illustrate their application using historical data from the Liquid 45 Index (LQ45) during the period 2018-2022. Through the utilization of R programming, a portfolio consisting of the combined model will be tested to build an optimal investment portfolio.

The results of this study reflect the difference between the attributes of the MV and MAD models in portfolio optimization. The MV model yields an expected rate of return of 16.55%, accompanied by a noteworthy risk level of 275.79%. On the other hand, the MAD model exhibits a more conservative stance, providing an expected rate of return of 16% accompanied by a lower risk profile of 192.33%. These findings provide strong insights into the potential performance and risk preferences of different investment contexts. The study highlights the ability of the portfolio optimization process to adapt to individual investor preferences, allowing for a balance between maximizing returns and minimizing risk.

The findings also underscore the importance of thorough analysis in constructing portfolios under volatile and crisis-prone market conditions, ultimately leading to the formulation of optimized portfolio structures that are based on historical data. This research has significant implications for the field of portfolio optimization, especially in the context of market instability and crises, offering invaluable insights to inform prudent investment decision-making.

Keyword: *Portfolio Optimization, LQ45, MV, MAD, VAR, R Language*