ABSTRACT

Indonesia has a strong agricultural sector that plays a vital role in the national economy. In addition to contributing to state revenue, this sector is crucial for food security, employment, and rural community welfare. The stable and growing agricultural export value is expected to contribute more significantly to the country's foreign exchange earnings. Therefore, forecasting agricultural export values is essential to support better policymaking in maintaining export growth and stability. This study employs Support Vector Regression (SVR) optimized with Particle Swarm Optimization (PSO) to forecast agricultural export values. Historical export data is used as input variables, with lag selection based on the Partial Autocorrelation Function (PACF). PSO optimization is applied to determine the optimal parameters C, ε, and γ by evaluating different lag combinations, particle numbers, and iterations to achieve the lowest Mean Absolute Percentage Error (MAPE) through cross-validation with a sliding window approach. The model is implemented using two kernel functions: linear and Radial Basis Function (RBF). The results indicate that the RBF kernel achieves a higher accuracy with a MAPE of 9.7095%, compared to the linear kernel with a MAPE of 10.8364%. These findings demonstrate that the developed forecasting model effectively predicts agricultural export values with a high level of accuracy.

Keywords: Support Vector Regression, Particle Swarm Optimization, Forecasting, Agricultural Exports, Linear Kernel, Radial Basis Function Kernel, Mean Absolute Percentage Error