Title : Forecasting Fresh Durian Export Volumes Using Machine Learning Models.

Author : **1.** Mrs. Thanaphon Kamdee   **Student ID :** 640510536

Major : Statistics

Advisors : **1.** Dr.Chalermrat Nontapa

2. Associate Professor Lampang   Saenchan

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ABSTRACT

This study aims to develop forecasting models for the export volume of fresh durian from Thailand and to compare the performance of four forecasting models: Random Forest, Adaptive Boosting, Support Vector Regression (SVR), and an Ensemble Forecasting Model. The dataset comprises monthly export volumes of fresh durian from January 2013 to December 2024 (144 months). The data were divided into two sets: the first training dataset from January 2013 to December 2023 (132 months), to construct the forecasting model; and the second testing dataset from January 2024 to December 2024 (12 months) to compare the accuracy of each model. The performance of each model was compared by the Mean Absolute Percentage Error (MAPE), the coefficient of determination (R-Squared), and the Reduction Error Rate (RER). The results show that the Ensemble Forecasting Model combining Random Forest and Support Vector Regression (SVR) is the best model for forecasting the export volume of fresh durian, with the lowest MAPE of the training set of 1.8159%, MAPE of the test set of 1.9178%, R-Squared of 99.73%, and RER of 72.3706%.