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A Comparative Simulation Study of Nonlinear Time Series Model for Forecasting Tourism Data

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ABSTRACT

Simulation is a tool to evaluate the performance existing and proposed under configure conditions of the simulation data. A simulation process can be useful to test theories and understand behaviour of the statistical methods. This study aimed to compare SVM, WSVM and EMDWSVM model in order to identify the best model for forecasting time series data based on 10 replicates on 2040 generated data of the SARIMA (3,1,3) (3,1,1) [12] model. This SARIMA model come from the lowest error between SARIMA model. The simulations were performed with three criteria namely root mean square error (RMSE), mean absolute error (MAE) and mean absolute percentage error (MAPE). The results of the study show a lowest error value for the EMDWSVM time series model and the performance of all measurements is small then other models. The results also proved that combination of three method EMDWSVM is the advanced forecasting techniques in all the considered situation in providing better forecasting accuracy, the application of an EMD-based combined model particularly with wavelet method reduction approach for tourist arrivals forecasting due to better prediction results and stability than those achieved from single and current hybrid models. Therefore, the modified the existing hybrid model WSVM combined with the empirical mode decomposition (EMD) to decrease the complexity of dataset in order to improve its prediction accuracy.

Keywords: *Sarima; Emdwsvm; WSVM*