Prediction of Tanzanian Energy Demand using Support Vector Machine for Regression (SVR)

ABSTRACT

This study discusses the influences of economic, energy and environment indicators in the prediction of energy demand for Tanzania applying support vector machine for regression (SVR). Economic, energy and environment indicators were applied to formulate models based on time series data. The experimental results showed the supremacy of the polynomial-SVR kernel function and the energy indicators model in providing the transformation, which achieved more accurate prediction values. The energy indicators model had a correlation coefficient (CC) of 0.999 as equated to 0.9975 and 0.9952 with PUKF-SVR kernels for economic and environment indicators model. The energy indicators model closeness of predicted values as compared to actual values was the best as compared to economic and environment indicators models. Furthermore, root mean squared error (RMSE), mean absolute error (MAE), root relative squared error (RRSE) and relative absolute error (RAE) of energy indicators model were the lowest. Long-run sustainable development of the energy sector can be achieved with the use of SVR-algorithm as prediction tool of future energy demand. Keywords Energy demand, energy demand indicators, energy prediction, support vector machine for regression