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Comparison of Forecasting Techniques to Predict US Unemployment Rate

F. Radmehr and R.S. Ahluwalia

Industrial and Management Systems Engineering Department
West Virginia University
Morgantown, WV, USA

Corresponding author's Email: rashpal.ahluwalia@mail.wvu.edu

Author Note: Mr. Farzad Radmehr has a BS and an MS degree in Industrial Engineering from University of Tehran, Tehran, Iran. He is currently pursuing a Ph.D. degree in Industrial Engineering at West Virginia University (WVU). Dr. Ahluwalia is professor of Industrial Engineering at WVU. His areas of interest include Quality and Reliability Engineering, Information Management, and Manufacturing Systems. He is a registered Professional Engineer (PE) in West Virginia, a fellow of the American Society for Quality, and a life senior member of the Institute for Electrical & Electronics Engineers (IEEE).

Abstract: Four forecasting techniques, Multiple Linear Regression (MLR), Artificial Neural Network (ANN), Support Vector Regression (SVR), and Hybrid Bayesian Model (HBM)wereused to predict US unemployment rate. Monthly unemployment data was obtained from the Federal Reserve Bank web site for the period January 1993 to June 2014. Five economic factors, 1) Consumer Price Index, 2) Average ten-year return on treasury securities, 3) Total Nonfarm payroll, 4) Four week moving average of jobless claims filed, and 5) Stand & Poor 500 index, were used to predict the unemployment rate. Prediction accuracy was determined by the Root Mean Square Error (RMSE) and Mean Absolute Percentage Error (MAPE).For the given dataset, the accuracy of ANN and HBNmethods was better than MLR and SVR.

Keywords: Multiple Linear Regression, Artificial Neural Networks, Support Vector Regression, Hybrid Bayesian Model, US Unemployment Rate