ABSTRACT

The Human Development Index (HDI) is used to measure the quality of life and community welfare. Indonesia's HDI continues to increase, but interregional disparities remain high. Papua Province has the lowest HDI value in Indonesia in 2023, which is 63,01 reflecting the low level of human development achievement in the region. The HDI value is calculated from the dimensions of health, education, and expenditure. Poverty has values that vary between regions so that the data used in the analysis have the potential to contain outliers that may affect the estimation results. This study aims to build a robust regression model of M-Estimation with Huber weighting on the HDI data of districts/cities in Papua Province in 2023 to obtain parameter estimates that are stable and efficient against outliers. The dependent variable used is HDI, while the independent variables consist of deterministic and stochastic variables. The deterministic variables include Life Expectancy (AHH), Expected Years of Schooling (HLS), Mean Years of Schooling (RLS), and Expenditure per Capita. The stochastic or random variable used is the Percentage of Poor Population. The estimation process was carried out using the Iteratively Reweighted Least Squares (IRLS) algorithm with initial estimates obtained from the Ordinary Least Squares (OLS) method. The robust regression model with Huber weighting produced a coefficient of determination (R^2) of 0,9962 indicating that 99,62% of the variation in HDI can be explained by the independent variables in the model.

Keywords: *Robust* Regression, M-estimation, Huber Weight, HDI, Outlier, Papua