

ABSTRACT

As one of the world's largest nickel producers and an exporting country, Indonesia plays an important role in the global nickel market. The global nickel price is fluctuative, thus requiring an effective and efficient forecasting method to ensure the right decisions and regulations. The Fuzzy Time Series is a forecasting method that offers advantages compared to other methods, as not requiring specific assumptions. This research applies Chen's Fuzzy Time Series method with the Fuzzy C-Means Clustering interval partitioning algorithm to forecast the global nickel price. The data used is the monthly global nickel closing price from January 2014 to August 2024. The formation of interval partitions is an important measure that affects the forecasting results. In this study, the interval partitions are formed using the Fuzzy C-Means Clustering algorithm which produces 27 optimal cluster centers based on the Silhouette Coefficient value of 0,7864805. The forecasting results show a Mean Absolute Percentage Error (MAPE) of 6,787% for training data and 6,999% for testing data. Hence, Chen's Fuzzy Time Series method with Fuzzy C-Means Clustering interval partitioning algorithm has a great forecasting accuracy and can be used to forecast global nickel prices.

Keywords: Nickel, Forecasting, Chen's Fuzzy Time Series, Fuzzy C-Means Clustering.