PEMODELAN HARGA MINYAK *WEST TEXAS INTERMEDIATE* MENGGUNAKAN MODEL ARIMA, ARFIMA, *FUZZY TIME SERIES MARKOV CHAIN* DAN *HYBRID* ARIMA-FTSMC

ABSTRAK

Minyak *West Texas Intermediate* (WTI) adalah jenis minyak bumi yang memiliki kandunga belerang dan kepadatan rendah. Minyak ini disebut sebagai minyak manis dan ringan dan dianggap memiliki kualitas baik untuk diolah menjadi bensin. Tingginya kualitas minyak WTI sehingga harga minyak WTI dijadikan harga standar minyak dunia. Fluktuasi harga minyak WTI dapat dimodelkan dengan model deret waktu yaitu *Auto-regressive Integrated Moving Average* (ARIMA), *Auto-regressive Fractionally Integrated Moving Average* (ARFIMA), *Fuzzy Time Series Markov Chain* dan diperkenalkan model *hybrid* ARIMA-FTSMC. Pemodelan ini menggunakan data harga minyak WTI yang memiliki pola *long memory*, yaitu data bulanan dari tahun 2003 hingga tahun 2021. Berdasarkan tingkat akurasinya, model *Fuzzy Time Series Markov Chain* memberikan nilai akurasi paling kecil dibandingkan model lainnya.

Kata kunci: *Auto-regressive Integrated Moving Average, Auto-regressive Fractionally Integrated Moving Average, hybrid* ARIMA-FTSMC, WTI, *long memory.*

THE MODELING OF THE WEST TEXAS INTERMEDIATE OIL PRICES BY USING ARIMA, ARFIMA, FUZZY TIME SERIES MARKOV CHAIN SERIES AND HYBRID ARIMA-FTSMC MODELS

ABSTRAK

West Texas Intermediate (WTI) oil is a type of natural oil which have contained of sulfur and low density. This oil is referred to a sweet and light oil that is considered to have a good quality to proceed into gasoline. The high quality of WTI oil makes it become a standard of world's oil prices. The fluctuation of WTI price could be design with a time series models such as Auto-regressive Integrated Moving Average (ARIMA), Auto-regressive Fractionally Integrated Moving Average (ARFIMA), Fuzzy Time Series Markov Chain and introduced the hybrid ARIMA-FTSMC model. This design is using long memory pattern, the monthly data from 2003 to 2021. Based on accuracy level, the Fuzzy Time Series Markov Chain model provides the smallest accuracy value compared to other models.

Keywords: Auto-regressive Integrated Moving Average, Auto-regressive Fractionally Integrated Moving Average, hybrid ARIMA-FTSMC, WTI, long memory.