ABSTRACT

IMPLEMENTATION OF THE HYBRID VECTOR AUTOREGRESSIVE INTEGRATED MOVING AVERAGE (VARIMA) – GATED RECURRENT UNIT (GRU) METHOD IN FORECASTING THE STOCK PRICE OF PT BANK RAKYAT INDONESIA

By

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The capital market plays a crucial role in the national economic growth, including in Indonesia. PT Bank Rakyat Indonesia is one of the companies with the largest market capitalization, primarily due to its success in the UMKM segment. However, the fluctuations in BRI's stock prices demand in-depth analysis to assist potential investors in making informed investment decisions. This research aims to forecast the stock prices of PT Bank Rakyat Indonesia using the hybrid VARIMA-GRU method. This method is chosen because it combines VARIMA's ability to capture linear patterns with GRU's advantages in capturing nonlinear patterns. The results of the 30-day forward forecasting indicate that the hybrid VARIMA-GRU model performs exceptionally well in the 90% data training and 10% data testing scheme, with an RMSE value of 91.75 and MAPE of 0.0142%, compared to the 80% data training and 20% data testing scheme.

Keywords : Capital Market, Stocks, Prediction, Forecasting, VARIMA, GRU hybrid model.

ABSTRAK

IMPLEMENTASI METODE *HYBRID VECTOR AUTOREGRESSIVE INTEGRATED MOVING AVERAGE* (VARIMA) – *GATED RECURRENT UNIT* (GRU) DALAM PERAMALAN HARGA SAHAM PT BANK RAKYAT INDONESIA

Oleh

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Pasar modal berperan penting dalam pertumbuhan ekonomi nasional, termasuk di Indonesia. PT Bank Rakyat Indonesia adalah salah satu perusahaan dengan kapitalisasi pasar terbesar, terutama karena keberhasilannya dalam segmen UMKM. Meskipun demikian, fluktuasi harga saham BRI menuntut adanya analisis mendalam untuk membantu calon investor dalam membuat keputusan investasi yang tepat. Penelitian ini bertujuan meramalkan harga saham PT Bank Rakyat Indonesia dengan menggunakan metode *hybrid* VARIMA-GRU. Metode ini dipilih karena mengombinasikan kemampuan VARIMA dalam menangkap pola linier dengan keunggulan GRU dalam menangkap pola nonlinier. Hasil peramalan 30 hari ke depan menunjukkan bahwa model *hybrid* VARIMA-GRU memiliki kinerja yang sangat baik pada skema 90% data *training* dan 10% data *testing* dengan nilai RMSE sebesar 91,75 dan MAPE sebesar 0,0142%, dibandingkan skema 80% data *training* dan 20% data *testing*.

Kata Kunci : Pasar Modal, Saham, Prediksi, Peramalan, VARIMA, GRU, *hybrid model*.