ABSTRAK

Prissy Nusaiba Yulisa, 2022, Peramalan Nilai Ekspor Migas di Indonesia Menggunakan Model *Long Short Term Memory* dan *Gated Recurrent Unit* dengan Optimasi Nesterov Adam, Skripsi, Program Studi Statistika, Universitas Muhammadiyah Semarang. Pembimbing: I. M. Al Haris, M.Si., II. Prizka Rismawati Arum, M.Stat.

Ekspor migas merupakan komoditas yang berperan penting dalam perekonomian negara dan pengelolaannya harus dimaksimalkan demi kemakmuran dan kesejahteraan rakyat. Dalam penelitian ini, dilakukan peramalan yang dapat dijadikan sebagai bahan masukan bagi pemerintah dalam merencanakan arah kebijakan terkait ekspor migas pada masa mendatang. Metode peramalan yang digunakan dalam penelitian ini adalah *Long Short Term Memory* (LSTM) dan *Gated Recurrent Unit* (GRU) dengan optimasi Nesterov Adam. LSTM mampu mengatasi masalah ketergantungan jangka panjang, sehingga dapat mengenali pola data dengan baik. GRU merupakan variasi lain dari LSTM yang memiliki komputasi lebih sederhana. Sedangkan nesterov adam berperan dalam mempercepat proses *training* dan menurunkan nilai *error*. Berdasarkan hasil penelitian, diperoleh akurasi tertinggi dalam prediksi nilai ekspor migas menggunakan model terbaik LSTM pada percobaan menggunakan nilai α 0.001, jumlah *neuron* 20, *epoch* 100, dan nilai MAPE 12.8% dengan akurasi 87.2%.

Kata Kunci: Ekspor Migas, *Gated Recurrent Unit*, *Long Short Term Memory*, Peramalan

ABSTRACT

Prissy Nusaiba Yulisa, 2022, Forecasting the Value of Oil and Gas Exports in Indonesia Using the Long Short Term Memory Model and Gated Recurrent Unit with Nesterov Adam Optimization, Thesis, Statistics Study Program, University of Muhammadiyah Semarang. Supervisor: I. M. Al Haris, M.Si., II. Prizka Rismawati Arum, M.Stat.

Oil and gas exports are commodities that play an important role in the country's economy and their management must be maximized for the prosperity and welfare of the people. In this study, forecasting is carried out that can be used as input for the government in planning policy directions related to oil and gas exports in the future. The forecasting methods used in this research are Long Short Term Memory (LSTM) and Gated Recurrent Unit (GRU) with Nesterov Adam optimization. LSTM is able to overcome long-term dependency problems, so that it can recognize data patterns well. GRU is another variation of LSTM which is computationally simpler. Meanwhile, Nesterov Adam played a role in accelerating the training process and reducing the error value. Based on the results of the study, the highest accuracy was obtained in predicting the value of oil and gas exports using the best LSTM model in the experiment using a value of 0.001, the number of neurons 20, epoch 100, and MAPE value of 12.8% with an accuracy of 87.2%.

Keywords: *Oil and gas exports, Gated Recurrent Unit, Long Short Term Memory, Forecasting*