

ABSTRAK

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PREDIKSI PERGERAKAN TREN SAHAM INDUSTRI BATU BARA INDONESIA TAHUN 2019 MENGGUNAKAN *HIDDEN MARKOV MODELS*

Skripsi, Fakultas Sains dan Teknologi (2019)

(xiii + 78 halaman, 24 tabel, 12 gambar, 3 lampiran)

Pergerakan tren saham merupakan salah satu tolak ukur yang sesuai untuk melihat fluktuasi pesat keadaan pasar. Prediksi jangka pendek yang akurat dalam menentukan pergerakan tren saham menjadi semakin penting karena kebutuhan pasar yang semakin meningkat. Penelitian ini bertujuan untuk memprediksi pergerakan tren saham pada industri batu bara di Indonesia tahun 2019. Data penelitian ini menggunakan harga pembukaan (*open*), penutupan (*close*), terendah (*low*) serta tertinggi (*high*) dari 18 perusahaan industri batu bara yang ada di Indonesia. Prediksi harga saham dilakukan menggunakan Metode *Holt Winter's Exponential Smoothing*. Sedangkan analisis penelitian prediksi tren menggunakan salah satu pendekatan stokastik yaitu Metode *Hidden Markov Models* (HMM) dengan Algoritma *Forward-Backward*. HMM mengestimasi barisan pergerakan tren yang paling mungkin terjadi dari barisan observasi perubahan harga saham. Observasi perubahan harga saham dibagi menjadi perubahan sebanyak 2%, 5% dan 7%. Sedangkan pergerakan tren saham dibagi menjadi *bullish*, *bearish* dan *sideways*. Berdasarkan analisis data, diperoleh kesimpulan berupa 3 barisan pergerakan tren saham industri batu bara di Indonesia selama tahun 2019 dalam periode bulanan. Masing-masing barisan mewakili perubahan harga saham sebanyak 2%, 5% dan 7%. Nilai persentase dipilih sesuai preferensi pengguna dalam melihat kenaikan maupun penurunan harga. Persentase kecil digunakan untuk konsentrasi perubahan harga kecil, sedangkan persentase besar digunakan untuk konsentrasi perubahan yang besar.

Kata Kunci: algoritma *Forward-Backward*, *Hidden Markov Models*, prediksi, tren saham

Referensi: 19 (1989-2018)

ABSTRACT

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PREDICTION OF STOCKS' TRENDS MOVEMENTS FOR INDONESIA'S COAL INDUSTRY IN 2019 USING HIDDEN MARKOV MODELS

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(xiii + 78 pages, 24 tables, 12 pictures, 3 appendices)

The movements of stocks' trends are one of the suitable benchmarks in observing the market's rapid fluctuations. Nowadays, the importance of an accurate short-term prediction of stocks' trends movements has increased due to the increasing market demand. This study aims to predict the movements of stocks' trends for Indonesia's coal industry in 2019. This research used open, close, low, and high price from 18 Indonesia's coal companies. Holt Winter's Exponential Smoothing is used to predict the stocks' price. Meanwhile, the research analysis for predicting the trends proposes a stochastic approach, Hidden Markov Models (HMM) with a Forward-Backward Algorithm. HMM estimates the sequence of trends movements which is most likely to occur from the sequence of observed changes in stock price. The observed changes in stock price are divided into 2%, 5%, and 7%. While the movements of stocks' trends are categorized into bullish, bearish, and sideways. Based on data analysis, conclusions are drawn into 3 sequences of stocks' trends movements for Indonesia's coal industry during 2019 in the monthly period. Each sequence represents the changes in stock price, which are 2%, 5% or 7%. The percentage value is selected based on user preferences in observing the price incline or decline. Small percentages are used for concentration on small changes in stock price, while large percentages are used for concentration on large changes in stock price.

Key words: Forward-Backward algorithm, Hidden Markov Models, prediction, stock trends

References: 19 (1989-2018)