

ABSTRACT

Investing is one way to generate future returns. A particularly popular form of investment is investing in financial assets such as stocks. Investors need the ability to analyze stock price movements in order to make sound investment decisions. Stock prices in the capital market are volatile, making them difficult to predict with certainty. A method is needed that can model and predict stock price movements. One method that can be used is Geometric Brownian Motion (GBM). The GBM model assumes that the model parameters namely drift (or mean) and volatility (or standard deviation) are constant, making it less capable of accurately depicting actual market conditions. The Geometric Brownian Motion-Markov Switching (GBM-MS) model is a model that can be used to address these limitations, as the GBM-MS model allows for changes in market conditions so that the model parameters can change according to prevailing market conditions. This study aims to apply the GBM-MS model in forecasting the stock price of PT Pakuwon Jati Tbk. The data used in this study consists of daily closing stock prices for the period from January to December 2025. The results of this study indicate that the GBM-MS model is capable of generating stock price forecasts with a very high level of accuracy. This is evidenced by the Mean Absolute Percentage Error (MAPE) value of 2.87% on the test data. This value indicates that the GBM-MS model is capable of accurately forecasting the stock price of PT Pakuwon Jati Tbk and can provide additional information to investors in making investment decisions.

Keywords: Investment, Capital Market, Geometric Brownian Motion, Markov Switching, Forecasting, Stocks.