

APPLICABILITY OF GEOMETRIC BROWNIAN MOTION AND GEOMETRIC FRACTIONAL BROWNIAN MOTION TO FORECAST SHARE PRICES OF TELECOMMUNICATION SERVICES SECTOR IN SRI LANKA

Athukorala, A.K.K.K.^{1*} and Dissanayake, A.R.²

^{1,2}University of Moratuwa, Moratuwa, Sri Lanka

*kalpanakumudukumari@gmail.com

The Brownian motion is a Mathematical concept that European botanist Robert Brown introduced in 1827 to study the behavior of molecules. The Brownian motion concept was transformed into many versions, and Geometric Brownian Motion (GBM) and Geometric Fractional Brownian Motion (GFBM) are the latest transformations of this concept. The GBM and GFBM are mathematical models used to forecast the prices of stocks, commodities, etc. In this study, the GBM and GFBM were tested to estimate the share prices of telecommunication industry companies in Sri Lanka. The two sample companies were selected by representing 18% of the population of the telecommunication industry group. The five-year share prices were collected from sample companies: Sri Lanka Telecom PLC and Dialog Axiata PLC. The two models were implemented by estimating parameters such as the drift, the volatility, probability measurement and the time interval. In addition, the Hurst component was generated by a MATLAB program for GFBM. This study concluded that GBM is the most accurate model for forecasting share prices of the telecommunication industry group with minimum mean absolute percentage error (MAPE).

Keywords: *GBM, GFBM, MAPE*