



## ANALYSIS OF STOCK PRICES USING MARKOV CHAIN

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The stock market is a public market. In the recent scenario, it has become a vital part of the global economy. The economic situation of any country is influenced by the market fluctuation. Sri Lanka's stock market is called as Colombo Stock Exchange (CSE). Analyzing stock prices is essential from the investor's point of view to make effective decisions regarding their investment; such include buying, holding and selling. Further, these prices are not constant for a specific period and fluctuate from time to time based on the market conditions. However, the investors need to predict the future behavior of the prices of the stock to make effective decisions. Therefore, it is essential to study the stock trends of the market for different companies. This study aims to analyze the behavior of daily stock prices trend of the companies: (1) JOHN KEELS HOLDING(JKH) (2) COMMERCIAL BANK OF CEYLON(CBC) (3) CEYLON TOBACO(CT), which have been listed as the top three companies of Sri Lanka by CSE during the period of 2013-2014. The current research has been under taken considering the closing prices of 354 trading days (from Jan-2013 to Jun-2014) of each of the above three companies by adopting the famous Markov analysis, which is seen to be relevant to make probabilistic statements about future stock price levels. Two models were highlighted by means of defining the states of the system. For each company, the states of the chain were considered as gain or loss for Model 1 and small gain, moderate gain, large gain, small loss, moderate loss or large loss for Model 2, and we compared the stock prices of these three companies by means of long run probabilities. Results reveal that the chance of gain is comparatively high among CBC share holders. This motivated us to predict the immediate future stock prices for CBC. For this purpose, the Markov technique was again applied to differenced data of moving averages and actual closing prices. Finally, we predicted the stock prices of CBC for next few days using this method. Results from this study help investors to make effective decisions regarding their future investments.

**Keywords:** Markov chain, Stock trend, Steady state, Closing price