

**COMPARISON OF ARIMA AND SAMA CIRCULAR  
MODELS FOR STOCK PRICE PREDICTION FOR  
SELECTED COMPANIES**

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Degree of Master of Science

Department of Mathematics

University of Moratuwa

Sri Lanka

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Thesis submitted in partial fulfilment of the requirements for the degree of Master of  
Science in Financial Mathematics

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## DECLARATION

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## **ABSTRACT**

In rapidly moving world, a complimentary source of income for any individual has become essential requirement. Investors are very fond of stock prices to make their benefits and so they more concern about the future of the stock market. The stock market is going increase because of investors for their submissive income. Selecting stocks for marketing is actually a rough job and person could not trade without having a clear analysis and the background study of the particular stock. Scientific forecasting techniques get hold on the place of lighthouse in share market investments and it is divided in to two parts as statistical techniques and soft computing techniques. This study is aimed on univariate statistical techniques with Auto Regressive Integrated Moving Average method (ARIMA) and Sama Circular Model (SCM). Literature revealed that some major weaknesses of ARIMA model and SCM minimizing those weaknesses.

This study is based on monthly stock prices and limited 5 years and 5 companies of listed companies of Colombo stock Exchange (CSE). Practical steps which need to be undertaken to use SCM and ARIMA models are used to stock price prediction. The results revealed that SCM is superior to ARIMA and SCM can be applied to every seasonal and cyclical variations.

**Keywords:** Auto Regressive Integrated Moving Average Model, Sama Circular Model

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## **List of Abbreviations**

ARIMA	Auto Regressive Integrated Moving Average
CM	Circular Model
SCM	Sama Circular Model
MAE	Mean Absolute Error
RMSE	Root Mean squared Error
ANN	Artificial Neural Network
LSTM	Long Short term memory
CSE	Colombo Stock Exchange