

**DEVELOPMENT OF AN INDEX TO COMPARE THE
COLOMBO STOCK EXCHANGE REGISTERED
COMPANIES BASED ON STOCK PRICES
VOLATILITY AND SYSTEMATIC RISK EFFECT**

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Degree of Master of Science in Business Statistics

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Abstract

Managing the risk is a key element in portfolio analysis and many studies have been done to identify the impact of the risk into stock market investments. It allows the investors to consider the potential downsides before making choices on investments. The study aims to help investors by making it easy for them to make informed decisions on how to diversify their portfolio while minimizing the risk that it inherits. The dataset has been taken from Colombo Stock Exchange and it has data from 2016 January to 2020 December for 19 sectors. The dataset includes 264 companies, 239080 instances and quarterly systematic risk values for each sector. In this study we are using statistical methods such as K Means clustering, Pool regression and time series decomposition. In the first method study is providing an algorithm to identify the clusters in a sector to minimize the risk by allocating the investment into different clusters within the same sector regression. The second method uses a pool regression model to find out if there is any relationship between the systematic risk and the residual values that have been taken from time series decomposition in a sector. In the third method a new index has been introduced to cluster the sectors in CSE by using systematic risk and residual values. The first method provides clustering results based on stock price volatilities for each sector. This method is best suitable for an investor that is interested in allocating the portfolio in one sector in CSE. The results of the second method are showing that out of all the 19 sectors in CSE 12 sectors have a correlation between the systematic risk and the residual values that have been taken from time series decomposition. Final method is providing a new index that has been used to cluster the 19 sectors in CSE. This method can be used to diversify the portfolios in a wide range of stocks that will help investors to manage their risk efficiently. The sector clusters is confirmed with the correlation table which was obtained using the stock prices in each sector.

Keywords: CSE, Colombo Stock Exchange, Clustering, Sri Lanka, Systematic risk.

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List of Abbreviations

CSE Colombo Stock Exchange