UNIVERSITI TEKNOLOGI MARA

INTEGRATING CLUSTER ANALYSIS, GEOMETRIC BROWNIAN MOTION AND ANALYTIC HIERARCHY PROCESS IN CAPITAL ALLOCATION

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Thesis submitted in fulfillment
of the requirements for the degree of
Master of Science

Faculty of Computer and Mathematical Sciences

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AUTHORS'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and relugations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Investment in stock market is a way of generating extra money. Essentially, the objectives of investment are to reduce the risk, increase the return and better diversification of capital investment. However, investment involves risk and investment in stock market is risky. Wise investment decision has to be made in order to prevent any loss of capital investment. As to help the investors, this study proposed four stages of investment framework which are selecting, forecasting, distributing and estimating profit. The proposed method can be used to select the right stocks, forecast the future prices, distributing the capital investment and estimating the profit gained. The mathematical models involved are cluster analysis, geometric Brownian motion and analytic hierarchy process. The effectiveness of the proposed method is tested on a real investment situation in Bursa Malaysia involving small size companies. Furthermore, methodology is build to group a large amount of stocks into several clusters based on their performance and selected the clusters that gave high return to proceed with forecasting future closing prices. Then, eight stocks from the higher percentage increase of forecasted return are selected to carry on with distribution proportion of capital investment. Profit estimation can be made after all the stages are analyzed. It is found this proposed method is able to reduce the risk of loss, increase the return and better diversification of capital investment.

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