ADAPTIVE SELECTION OF KLSE STOCKS USING NEURAL NETWORKS

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ABSTRACT (ENGLISH)

Stock is becoming a significant investment tools that contributes towards Malaysia economic growth. Thus it is vital to increase investor's confidence in the Malaysia stock market. In this era of Information Age, artificial intelligence is applied to develop sound investment analysis tools in selecting winning Malaysia stocks. Hence in this study, neural network technology is deployed to build an adaptive neural net trading system, specifically adopting the multilayer feedforward network with backpropagation learning algorithm. A 22-18-2-network architecture of a prediction model is derived from the developed network simulator to predict the following quarter stock price change, of twenty publicly traded Malaysian companies. A promising classification competency of 80 percent correctness is recorded after the network is iteratively trained for 6000 epochs. This study also indicates that the neural network generated forecasting model is capable of outperforming the statistical model, as recorded by 80 percent neural network accuracy versus 77.3 percent binary logistic regression accuracy. The findings conclude that the neural forecasting ability could be further enhanced. Future research could incorporate technical analyst approach for a comprehensive stock valuation and also integrates with fuzzy technology to handle imprecise data.

ABSTRACT (BAHASA MELAYU)

Saham merupakan alat pelaburan yang semakin penting menyumbang ke arah pertumbuhan ekonomi Malaysia. Justeru itu, keyakinan pelabur terhadap pasaran saham Malaysia perlu ditingkatkan. Di era teknologi maklumat ini, kepintaran buatan diaplikasikan untuk membangunkan alat analisis pelaburan yang berupaya memilih saham cergas. Oleh itu, pendekatan rangkaian neural digunakan untuk membangunkan sistem dagangan rangkaian neural yang adaptif, yang berpandukan senibina suap hadapan berlapis dengan algoritma rambatan balik. Senibina modul ramalan neural 22-18-2 telah dijanakan dari sistem simulasi neural berkenaan untuk meramalkan perubahan suku harga saham seterusnya, bagi 20 buah syarikat Malaysia yang disenaraikan. Setelah rangkaian neural melalui 6000 pusingan pembelajaran, keupayaan pengkelasan neural yang memberangsangkan dihasilkan, iaitu sebanyak 80 peratus ketepatan dicatat. Kajian ini juga membuktikan bahawa modul ramalan neural berupaya mengatasi modul ramalan statistik, dengan 80 peratus ketepatan neural berbanding dengan 77.3 peratus ketepatan *binary logistic regression.* Kesimpulannya, keupayaan ramalan neural masih boleh dipertingkatkan. Kajian seterusnya harus mengambil kira pendekatan analisis teknikal untuk membolehkan satu penilaian pemilihan saham yang menyeluruh dan juga harus mengintegrasikan teknologi fuzi untuk pengendalian data kabur.

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Good luck and be on your way to be an astute investor!

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CHAPTER 1

INTRODUCTION

The gaining popularity of stock as an investment tool in Malaysia is clearly reflected by the concomitant rise of companies listed in the Kuala Lumpur Stock Exchange (KLSE). As at 18 July 2002, 850 companies totaling RM541.56 billion market valuation is recorded as opposed to a mere 262 listed companies in 1973. The influx of both domestic and foreign investors have opened up a golden opportunity for the listed companies to raise fund in a cost effective manner with the purpose of financing their corporate investment and expansion. Increase in investment activities in turn help to propel Malaysia economic development by mobilizing long-term funds from the investing public to finance public development programs and private investment. In hindsight, the ability to attract and sustain investors is the key success factor. By looking at the objective of each investor, be it an individual, a government, a pension fund, or a corporation, to them the end result of the investment activity is a gain in *return on investment (ROI).*

There is a need to incorporate the latest advances in the field of artificial intelligence in developing the 21st century investment tools and techniques, which range from qualitative assessments of corporate management to quantitative techniques. This direction of thought is prompted by Waite (1998), edited by Bruner (1998) in the wake of addressing the issue of underperformance in active equity portfolio management, that relates the cause of the problem to the lack of credible valuation tools and techniques that befits the Information Age as opposed to the Machine Age. Additional valid evidences are gathered with remarkable performance accomplished that even exceeded

The contents of the thesis is for internal user only

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