APPLICATION OF ARTIFICIAL NEURAL NETWORK IN SHARE PRICE FORECASTING

Thesis presented in partial fulfillment for the award of the
Bachelor Engineering (Hons) in Electrical of
INSTITUT TEKNOLOGI MARA

ZAKIAH BINTI MUSTAFA
Faculty of Electrical Engineering
INSTITUT TEKNOLOGI MARA
40450 Shah Alam, Malaysia
NOVEMBER 1998

Abstract

This thesis present the applications of artificial neural network (ANN) to predict the share price of Telekom Malaysia Bhd. The back-propagation algorithm used to train the ANN. The ANN model developed has three layers i.e input layer, hidden layer and output layer. In this projece,seven (7) input variables are chosen as the key factors for the changes of stock price. There are BSKL composite index, BSKL consumer index, RM currency (based on US dollar), Dow Jones index, Han Seng index, condition of Prime Minister which is categorized with 1 for stable and 0 for not stable and changes of the stock price. The output is the highest price (closing price) for that day. This approach is used for a short-term prediction where actual data is employed in the experiments. The results obtained are compared with the actual data. Back propagation feed-forward connectionist network have been using to do the prediction of Telekom share price for year 1997. The finding from the experiments demonstrate that with more training data and right parameters results in better prediction. This thesis also highlights the importance of determining the optimum parameters of the ANN to obtain good results. From the test carried out, it was found that neural network method can be used to predict the share price of stock market.

Acknowledgement

In the name of Allah, who is most Gracious, most Merciful and HIM alone is worth of all praise. I would like to express my sincere gratitude to my supervisor Puan Noraliza Binti Hamzah for her encouragement and guidance throughout this project. My gratitude is especially dedicated to my husband for his endless support and assistance that make everything become possible, my parents and my family for their encouragement and my sons for their patience. I am also grateful to my neighbors and friends for their very generous support.

Contents

CHAPTER 1
INTRODUCTION

1.0 PROJECT BACKGROUND

Prediction of the future value is an extremely common problem. The Artificial Neural Network (ANN) model has frequently been shown to outperform traditional technique. ANN are most likely superior to other conventional statistical techniques due to their non-linear structure and generalisation ability. Neural network can be trained to perform complex functions in various fields of application including pattern recognition and systems identification.

From the statisticians' point of view, neural network is a non-parametric non-linear statistical model. Financial analysts and academics have been working together to look into the possibility of predicting the price of stocks or stock market index from its history, economical, political and psychological factors and other information available to the public.

The prediction of stock market involves a large number of highly interrelated factors as economical, political and psychological in a complex fashion, making the prediction process very difficult. One of the principal advantages of neural network is its ability to discover patterns in data, which are so obscured as to be imperceptible to human researchers and standard statistical methods [5]. Neural networks are marvellously adaptable and not based on strictly defined model. In the mathematical sense, stock market data is chaotic and such behaviour is devastating to most other techniques. Neural networks are generally robust with inputs of this type [6].

Several neural networks models have been used for prediction and forecasting problem in the capital markets because little is known about the nature of the processes determining asset price. Neural networks approaches have been applied to several areas of financial applications such as bankruptcy prediction