

THESIS

**Forecasting Stock Price Index Using Artificial Neural
Networks in the Indonesian Stock Exchange**



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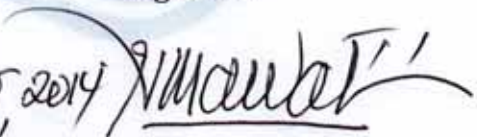
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DECLARATION

This thesis represents my own work and contains no material which has been previously submitted for a degree or diploma in the University of Atma Jaya Yogyakarta or any other institution, except where due acknowledgement is made.

Yogyakarta, 26 August 2014

A handwritten signature in black ink, appearing to read 'Soukkhy Tiphimmala', with a stylized flourish extending from the end.

Soukkhy Tiphimmala

INTISARI

Indeks harga saham adalah faktor yang signifikan mempengaruhi awal pada pengambilan keputusan keuangan investor. Itu sebabnya memprediksi gerakan yang tepat dari indeks harga saham jauh dianggap. Penelitian ini bertujuan untuk mengevaluasi efektivitas penggunaan indikator teknis, seperti A / D Oscillator, Moving Average, RSI, CCI, MACD, dll dalam memprediksi pergerakan Bursa Efek Indeks Harga Indonesia (BEI). Sebuah jaringan syaraf tiruan digunakan untuk peramalan indeks harga saham. Data yang ada dicapai dari Yahoo.Finance. Untuk menangkap hubungan antara indikator teknis dan tingkat indeks di pasar untuk periode diselidiki, jaringan saraf propagasi kembali digunakan. Kinerja statistik dan keuangan dari teknik ini dievaluasi dan hasil empiris menunjukkan bahwa jaringan syaraf tiruan adalah alat yang cukup baik untuk memprediksi pasar keuangan.

Kata kunci: Peramalan, prediksi, indeks harga saham, indikator teknis, jaringan syaraf tiruan

ABSTRACT

Stock price index is the initial significant factor influencing on investors' financial decision making. That's why predicting the exact movements of stock price index is considerably regarded. This study aims at evaluating the effectiveness of using technical indicators, such as A/D Oscillator, Moving Average, RSI, CCI, MACD, etc. in predicting movements of Indonesian Stock Exchange Price Index (IDX). An artificial neural network is employed for stock price index forecasting. The existing data are achieved from Yahoo.Finance. To capture the relationship between the technical indicators and the levels of the index in the market for the period under investigation, a back propagation neural network is used. The statistical and financial performance of this technique is evaluated and empirical results revealed that artificial neural networks are fairly good tools for financial market predicting.

Keywords: Forecasting, prediction, stock price index, technical indicators, artificial neural networks (ANN)

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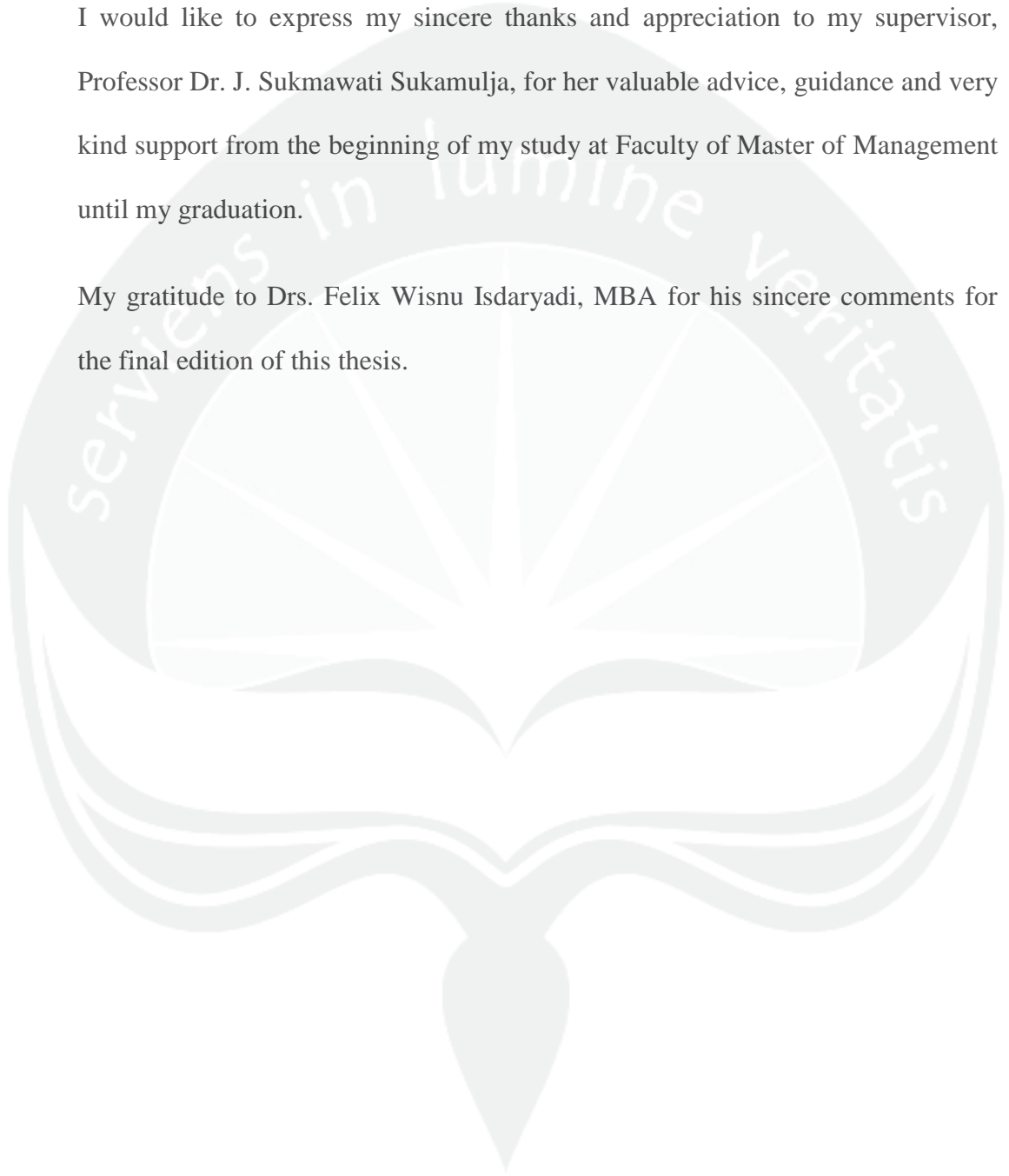


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ABBREVIATIONS

GDP : gross domestic product

IA : artificial intelligent

ANN : artificial neural network

IDX : Indonesian Stock Index

JKSE : Jakarta Stock Exchange (Pervious name of IDX)

MAE : mean absolute error

RMSE : root mean square error

MAPE : mean absolute percentage error

R^2 : goodness of fit

APE : absolute percentage error

PO : predicted output

AO : actual output

CCI : commodity channel index

MACD: moving average convergence divergence

ROC : price-rate-of change

RSI : relative strength index

PR : predicted rate (forecasting rate)

n : neuron

η : learning rate

μ : momentum constant

ep : epoch

IT : information technology

LSM : The *Libyan Exchange Stock Market*

TEPIX : The Tehran Exchange Price Index

