



شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم



شبكة المعلومات الجامعية
@ ASUNET



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of
15-25- c and relative humidity 20-40%

بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالاصل

5034

519,5

**Cairo University
Institute of Statistical Studies and Research
Department of Operations Research**

Optimization of Decisions in the Local Stock Market According to Changes of Gulf Region Stock Markets

By

Nisren Hassaneen Mohamed Hassaneen

B. Sc. In Commerce, Cairo University, 1999

Diploma in Operations Research, ISSR, 2005

Supervisors

Prof. Dr. Hegazy M. Zaher

Professor of Mathematical Statistics,
Institute of Statistical Studies and
Research, Cairo University

Dr. Tawfik M. Younis

Assistant Professor of Operations
Research, Institute of Statistical Studies
And Research, Cairo University

A thesis submitted in partial fulfillment of requirements for the master degree in
Operations Research, Department of Operations Research, Institute of Statistical
Studies and Research, Cairo University.

(2009)

Cairo University
Institute of Statistical Studies and Research
Department of Operations Research

Approval Sheet

Optimization of Decisions in the Local Stock Market According to Changes of Gulf Region Stock Market

By

Nisren Hassaneen Mohamed Hassaneen

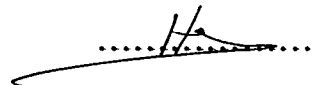
A thesis submitted to the Department of Operations Research, Institute of Statistical Studies and Research, Cairo University, in partial fulfillment of the requirements for the Degree of Master of Science in Operations Research.

This thesis has been approved by the Examining Committee

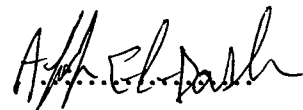
Name of the Examiner

Signature

Prof. Dr. Hegazy Mohamed Zaher
Institute of Statistical Studies and Research
Cairo University



Prof. Dr. Afaf El Dash
Faculty of Commerce and business administration
Helwan University



Dr. Ahmed Amin El Sheikh
Institute of Statistical Studies and Research
Cairo University



2009

ACKNOWLEDGMENT

First of all, I am great thankful to "Allah" for giving me the strength to carry out this work.

It pleasure to acknowledge **Prof. Dr. Hegazy M. Zaher**, professor of mathematical statistics, Institute of Statistical Studies and research, Cairo University for his extreme patience with me over a long period of hard work. I should like to acknowledgment his invaluable help given to me; fruitful guidance, supplying vital information and valuable materials which adds interest to this work, the extensive revisions and proof-reading with much care and patience.

I wish to express my cardinal thanks and deep gratitude to Assistant Prof. Dr. Tawfik M. Younis, Assistant professor of operations research, Institute of Statistical Studies and research, Cairo University for their valiable supervesion and encourgment during the course of this study.

Dedicated to

My parents, family

And all who give me a hand of help

Personal Data

- The author was born in Sayeda Zienab, Cairo Governorate.
- Primary education was completed in Baby Garden Language School, 1989.
- Preparatory education was completed in Mostafa Kamel School for Girls, 1992.
- Secondary education was completed in El-Sania Secondary School for Girls, 1995.
- B.Sc Accounting in Faculty of Commerce, Cairo University 1999.
- The author enrolled for degree of M.Sc in operations research, Institute of Statistical Studies and research, Cairo University, 2007.

Contents

	page
List of Tables.....	iv
List of Figures.....	vi
List of Abbreviations.....	ix
Summary.....	
Chapter1: Introduction.....	1
1.Investment.....	1
1.1 Stock Market.....	2
1.2 General Egyptian Stock Market Indicator.....	4
Chapter 2: Technical Analysis and Technical Indicators.....	7
2.1 Introduction.....	7
2.2 Review of Literature	8
2.3 Technical Analysis – characteristics	11
2.3.1 Mood is Stronger than Ratio.....	11
2.3.2 Optimism, Pessimism, Greed and Fear.....	12
2.4 Chart Types	13
2.4.1 Bar Charts.....	13
2.4.2 Line Charts.....	14
2.5 Technical Indicators.....	15
2.5.1 Bollinger Band Indicator.....	15
2.5.2 Linear Regression Indicator.....	18
2.5.3 Moving Average Convergence Divergence -MACD.....	20
2.5.4 Momentum Indicator.....	24
2.5.5 Moving Average Indicator.....	27
2.5.5.1 Simple Moving Average.....	27
2.5.5.2 Weighted Moving Average	28
2.5.5.3 Exponential Moving Average	28
2.5.6 Standard Deviation Indicator.....	33
2.5.7 Rainbows Indicator.....	34

2.5.8 Tomas Demark Indicator.....	34
2.5.9 Envelope Indicator.....	34
2.5.10 Line weight moving average Indicator.....	35
2.5.11 Lag value Indicator.....	35
Chapter 3: Some Intelligent Tools.....	36
3.1 Artificial Neural Network (ANN).....	36
3.1.1 Introduction.....	36
3.1.2 Why use Neural Networks?.....	38
3.1.3 Neural Networks versus conventional computers.....	38
3.1.4 Fundamentals of Neural Networks.....	39
3.1.4.1 Basic Concepts of Neural Networks	39
3.1.4.2 Model of an Artificial Neuron	40
3.1.4.3 Neural Network Architectures.....	45
3.1.4.4 Characteristics of Neural Networks	48
3.1.4.5 Learning Methods	48
3.2 Genetic Algorithms (GAs).....	51
3.2.1. An Overview.....	51
3.2.2 Genetic Algorithm.....	54
Chapter 4: Applied Studies.....	56
4.1 Study of the Effect of GULF Stock Markets Changes on the Local (Egyptian) Stock Market Changes.....	56
4.1.1 Introduction	56
4.1.2 Correlation between the Gulf, the Cairo & Alexandria Stock Exchange.....	56
4.1.3. The technical indicators used.....	57
4.1.4. Methodology	58
4.1.5. Genetic Algorithm Method.....	60
4.1.6. Artificial Neural Networks Method.....	61
4.1.7. Genetic Algorithm Based on Neural Networks Method.....	62
4.1.8. A comparison between the three methods.....	63

4.2 Comparison between Egyptian bank sector and the same Gulf sector.....	65
4.2.1 Introduction.....	65
4.2.2 The Technical Indicators Used.....	65
4.2.3 Methodology.....	66
4.2.4. Genetic Algorithm Method.....	68
4.2.5. Neural Networks Method.....	69
4.2.6. Genetic Algorithm Based on Neural Networks Method.....	70
4.2.7. A comparison between the three methods.....	72
4.3 Study of the effect of International stock market changes on the Local (Egyptian) stock market changes.....	73
4.3.1. Introduction.....	73
4.3.2. Correlation between the International, Gulf and the Cairo & Alexandria Stock Exchange.....	73
4.3.3. The Technical Indicators Used.....	75
4.3.4. Methodology	77
4.3.5. Genetic Algorithm Method.....	80
4.3.6. Neural Networks Method.....	81
4.3.7. Genetic Algorithm Based on Neural Networks Method.....	82
4.3.8. A comparison between the previous three methods.....	84
Chapter 5: Conclusion and Further Studies.....	85
References.....	86
Arabic Summary.....	

List of Tables

	Page
Table 4.1 Correlations Matrix of GULF and Local Stock Market	57
Table 4.2 Correlation between indices.....	57
Table 4.3 Performance measures obtained by Genetic Algorithm for Gulf Stock Markets test data.....	60
Table 4.4 Performance measures obtained by Neural Networks for Gulf stock markets test data.....	61
Table 4.5 Performance measures obtained by Genetic Algorithm Based Backpropagation Neural Network for Gulf stock markets test data.....	62
Table 4.6 Comparison between three methods to predicted of 7day's for the closing price of CASE 30 index	64
Table 4.7 Correlation between indices.....	65
Table 4.8 Performance measures obtained by Genetic Algorithm for Gulf Stock Markets BANK sector test data.....	68
Table 4.9 Performance measures obtained by Neural Networks for Gulf stock markets BANK sector test data.....	69
Table 4.10 Performance measures obtained by Genetic Algorithm Based Backpropagation Neural Networks for Gulf stock markets BANK Sector test data.....	71
Table 4.11 Comparison between three methods to predicted of 7day's for the Cairo & Alexandria Stock Exchange Bank sector index.....	72
Table 4.12 Correlations matrix of International, Gulf stock market and local stock market.....	74
Table 4.13 Correlation between indices.....	76

Table 4.14 Performance measures obtained by Genetic Algorithm for International and Gulf stock market test data.....	80
Table 4.15 Performance measures obtained by Neural Networks for International and Gulf Stock Markets test data.....	81
Table 4.16 Performance measures obtained by Genetic Algorithm Based Backpropagation Neural Network for International and Gulf stock markets test data.....	83
Table 4.17 Comparison between three methods to predicted of 7day's for the closing price of CASE 30 index.....	84