UNIVERSITI TEKNOLOGI MARA

ANALYSIS ON STOCK PRICE MOVEMENT USING GRAPH THEORY, P31S23

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ABSTRACT

Graph Theory (GT) is the study of graphs, which are mathematical structures used to model pairwise relations between objects. A precisely and quickly forecast stock price peaks and valleys will help in managing the stock market appropriately and guide it in a healthy direction, which will be a strong support for the economy's long-term growth. Volatility of stock prices can make it challenging for investors to predict the stock prices, as it often fluctuates rapidly and unpredictably. The techniques in GT can be used to analyse the selected stocks, providing insights into market behavior. The main objective in this study is to analyse stock prices using an undirected graph and identify the best sector using *k*-core analysis, which will help the investors understand the pattern of the stock price movement and decide which sector to invest in the future. The relationship of one stock to another is calculated by using the Spearman rank correlation and comparing it with the minimum threshold, which is 0.6, to get the adjacency matrix. By using the adjacency matrix, an undirected graph is obtained, and k-core analysis is used to identify the best sector by determining, which stock is in the core-dominant category. From all the steps in the methodology, the objective can be achieved and it can be concluded that both the traditional and GT methods have the same result, which is that industrial was the best sector for the investor to invest in. Combining various methods and analysing the stock for a longer time period are examples of recommendations that can be used in future studies.

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TABLE OF CONTENTS

	Page
SUPERVISOR'S APPROVAL	**i**
AUTHOR'S DECLARATION	**ii**
ABSTRACT	**iii**
ACKNOWLEDGEMENT	**iv**
TABLE OF CONTENTS	**v**
LIST OF TABLES	**vii**
LIST OF FIGURES	**viii**
LIST OF ABBREVIATIONS	**ix**
CHAPTER ONE: INTRODUCTION	**1**
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Research Objectives	3
1.4 Significant and Benefit of Study	3
1.5 Scope and Limitations of Study	3
CHAPTER TWO: LITERATURE REVIEW	**5**
2.1 Introduction	5
2.2 Previous Study on Stock Prediction Problem	5
2.3 Application of Graph Theory	10
2.4 Application on k-core Analysis	13
2.5 Gap Analysis on Graph Theory of Stock Price	14

2.5.1 Type of Application in Graph Theory 14
2.5.2 Previous Study on Type of Graph Theory 15
2.6 Summary 15

CHAPTER THREE: RESEARCH METHODOLOGY 16
3.1 Introduction 16
3.2 Flow of Research Methodology 16
3.3 Data Collection 18
3.4 Data Analysis 19
3.5 Model Formulation 20
3.5.1 Spearman Rank Correlation 20
3.5.2 Adjacency Matrix Formulation 21
3.6 Undirected Graph 21
3.7 *k*-core Analysis 22
3.8 Summary 22

CHAPTER FOUR: RESULTS AND DISCUSSIONS 23
4.1 Introduction 23
4.2 Analysis by Traditional Method 23
4.3 Average Quarterly Closed Price Result 24
4.3.1 Spearman Rank Correlation Result 25
4.3.2 Adjacency Matrix Formulation Result 36
4.4 Undirected Graph Result 46
4.5 *K*-core Analysis Result 47
4.6 Verification and Validation of the Result 51
4.7 Summary 52

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS 54
5.1 Conclusion 54
5.2 Recommendation 56

REFERENCES 57

APPENDICES 61