

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**DETERMINING THE RANKING OF SHARIAH-COMPLIANT STOCKS
IN THE HEALTHCARE SECTOR BY USING GREY RELATIONAL
ANALYSIS MODELS**

(I)

AHMAD NAZIRUL IMAN BIN AHMAD MIHAFIZUDDIN

(2020628328)

(II)

FATIN NUR AZMINA BINTI AB AZIZ

(2020861874)

NADIA IZZATI BINTI AZMI @ IBRAHIM

(2020899404)

(P3M22)

Report submitted in partial fulfillment of the requirement for degree of

(I)

Bachelor of Science (Hons.) Management Mathematics

(II)

**Bachelor of Science (Hons.) Mathematics & Bachelor of Business
Administration (Hons.) Business Economic**

Faculty of Computer and Mathematical Sciences

AUGUST 2022

ACKNOWLEDGEMENTS

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

First and foremost, we are grateful to Allah S.W.T for giving us the strength to complete this project successfully.

We would like to express my deepest appreciation to our beloved supervisor, Mrs. Farah Azaliney binti Mohd. Amin for her constant support and guidance. Under her supervision, we were provided with necessary information regarding this project for us to complete this research successfully.

It is also an honour to be assisted over for Mathematical Modelling (MAT530) and Final Year Project (MSP660) lectures, Dr. Zati Aqmar binti Zaharudin and Dr. Rossidah binti Wan for their consultation and continuous encouragement during classes.

Our sincere gratitude also goes to our family members and colleagues for giving us invaluable and enthusiastic assistance. Thank you all.

TABLE OF CONTENT

ACKNOWLEDGEMENTS	i
TABLE OF CONTENT	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
ABSTRACT	vi
CHAPTER 1: INTRODUCTION	1
1.1 Overview	1
1.2 Motivation	1
1.3 Problem Statement	3
1.4 Objectives	4
1.5 Significant and Benefits of Study	4
1.6 Scope and Limitation of Study	5
1.7 Definition of Terms	6
CHAPTER 2: BACKGROUND THEORY AND LITERATURE REVIEW	7
2.1 Overview	7
2.2 Applications of GRA	7
2.3 GRA methods	12
2.4 Healthcare Stock	13
2.5 Financial Ratios	14
2.6 Spearman's Rank Correlation Coefficients	18
CHAPTER 3: METHODOLOGY	21
3.1 Overview	21

3.2 Data Collection	22
3.3 Determining the ranking of the stocks	22
3.3.1 Deng’s Grey Relational Grade	26
3.3.2 Wu’s Grey Relational Grade	27
3..3.3 Wen’s Grey Relational Grade	27
3.4 Analyzing using Spearman’s Rank Correlation Coefficients	28
CHAPTER 4: RESULTS AND DISCUSSION	29
4.1 Overview	29
4.2 Financial Ratios	29
4.3 Deng’s Grey Relational Analysis with Distinguishing Coefficients (0.5)	30
4.3.1 Deng’s Grey Relational Grade with Distinguishing Coefficients (1)	32
4.4 Wu’s Grey Relational Grade	33
4.5 Wen’s Grey Relational Grade	34
4.6 Spearman’s Rank Correlation Coefficients	36
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS	39
REFERENCES	41
APPENDICES	46
APPENDIX A	46
APPENDIX B	48
APPENDIX C	52

ABSTRACT

The growing population of Muslims around the world, including Malaysia, has led to an increase in demand for Shariah-compliant financial products, especially Islamic stocks. The Covid-19 outbreak which started to spread starting in early 2020 has caused uncertainty in the stock market especially in the healthcare sector. Recently, the healthcare sector industry is growing rapidly due to the drastic increase in various products such as gloves, face masks, medicines and vitamins. Therefore, the main purpose of this study is to rank the performance of 14 Shariah-compliant stocks in the healthcare sector listed in the Bursa Malaysia using various Grey Relational Analysis (GRA) models. The Grey Relational Analysis (GRA) models used in the study involving models from Deng's (0.5), Deng's (1.0), Wu's and Wen's models. A sample of data of stock prices from 2017 until 2021 are obtained from 14 main companies. The results consistently show that TMCLIFE is the highest performing stock despite utilizing various GRA models with different distinguishing coefficients. In addition, the outputs from the Spearman's rank correlation indicates that Deng's (0.5) is the best method to evaluate the performance of the Shariah-compliant healthcare stocks. Practically, the findings of this can help investors in making investment decisions.