

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**A GRAPH THEORY ANALYSIS TOWARDS THE BEHAVIOUR
OF THE WORLD CRUDE OIL MARKET**

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(P05/S22)**

**Report submitted in partial fulfilment of the requirement
for the degree of
Bachelor of Science (Hons.) (Management Mathematics)
Bachelor of Business Administration (Hons.) (Business Economics)
College of Computing, Informatics and Media**

FEBRUARY 2023

ACKNOWLEDGEMENTS

In the name of Allah SWT, the Most Merciful, the Most Compassionate, the most Gracious. All praise belongs to Almighty Allah SWT, the Lord of the Worlds, and prayers and peace be upon Muhammad SAW, His servant and messenger.

First and foremost, we are most grateful to Allah SWT, the Ever-Magnificent, the Ever-Grateful, for providing us with guidance and energy so that we could successfully complete our thesis titled “A Graph Theory Analysis towards the Behavior of the World Crude Oil Market”.

We would also like to express our heartfelt appreciation to our supervisor, Dr. Suzila binti Mohd Kasim, Senior Lecturer in Graph Theory at the Centre for Foundation Studies, UiTM Cawangan Selangor, Kampus Dengkil, for providing us with the opportunity to conduct research and for offering vital guidance during this research process. We are incredibly appreciative for what she has granted us, and it was a great honour and privilege to undertake this research study.

We are eternally grateful to our parents for their love, prayers, and support. We appreciate your continued belief in us and desire for our emotional and financial well-being. We are appreciative of what you have taught us about perseverance and support for one another. We also want to thank ourselves for believing in us, for doing all this hard work, for having no days off, for never quitting, for always being a giver and attempting to give more than we receive, and for trying to do more right than wrong. Last but not least, we want to express our gratitude to everyone who encouraged us to engage in this research study.

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ABSTRACT

Today, the global economy is heavily reliant on fossil fuels such as crude oil, and the demand for these resources frequently causes political unrest due to the fact that a small number of countries control the largest reservoirs. The price of crude oil and its profitability, like any other sector, are heavily influenced by supply and demand. This research study investigates the behaviour of the world crude oil market by analysing countries' import and export of crude oil by employing the Minimal Spanning Tree (MST), a special kind of tree in graph theory that minimises the length of the edges of the tree. An example is, a cable company wanting to lay a line to multiple neighbourhoods, by minimising the amount of cable laid, the cable company will save money. Moreover, this research will also focus on the long-term and sustainable development of the world crude oil market and will provide a new perspective on the safest crude oil trading system. The world crude oil market is structured geographically and organizationally. From the computation made, results show that the crude oil market in the United States (US) takes the lead with greater betweenness, closeness, eigenvector and occupies the top spot for degree centrality. This research study is important for understanding how the global crude oil market operates. It will be crucial for world leaders in richer nations to put initiatives into place to maintain steady oil supply, which will be advantageous to everyone. Additionally, the information we gathered on the correlations between crude oil prices in different geographic markets can be utilised to predict inflation and economic growth. This research will be very helpful to international leaders in their future efforts to enhance the standard of living in undeveloped nations.