Project Title: Crude Oil Prediction

Team ID: PNT2022TMID23337

Project Design Phase-I - Solution Fit Template

1. CUSTOMER SEGMENT(S) — CS

Crude oil is one of the most important commodities in the world, accounting for one-third of global energy consumption. It is a starting material for most of the products that we use in everyday life. Given the important role price of the crude oil plays, it becomes extremely important to predict future oil prices. The ability to forecast the changes in oil prices allows economic participants such as firms to adapt to future market changes and provides decision-makers with accurate information which they can use to select the optimal decision for them.

6. CUSTOMER CONSTRAINTS — CC

The changes in crude oil prices are often great indicators of changes in the overall economy and global markets. Forecasting the price of oil accurately is difficult across various time periods as there is a multitude of factors that can affect the prices of oil. It is difficult to point out which factors have the dominant effect on the oil price. Of all the factors, supply and demand changes have always been the fundamental factors affecting the long-term trend of oil prices.

5. AVAILABLE SOLUTIONS — AS

Crude oil price forecasting can assist in minimizing the risks associated with volatility in oil prices. One method to predict the price is Time Series Analysis which is an insightful way to look at how a certain commodity changes over time. In time series models, it is assumed that the current price of crude oil reflects the effects of all influencing factors and that price forecasting can be done based on the behaviour of past crude oil prices.

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS — J&P

As price forecasts are very important to various stakeholders like governments, public and private enterprises, policymakers, and investors, we need to build a prediction model using time series analysis method.

9. PROBLEM ROOT CAUSE — RC

Since demand for crude oil is soaring day by day, various factors affect the oil price. They include technological factors, financial factors, and supply-demand factors. In such cases, the prediction of oil prices becomes complex.

7. BEHAVIOUR — BE

Auto-Regressive Integrated Moving Average (ARIMA) model is one of the more popular and widely used statistical methods for time-series forecasting. It predicts future moves by examining the difference between the values in the series as opposed to actual values. The values predicted by this model are more accurate when compared with the values obtained from manual prediction.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS — TR

The triggers include the factors that affect the price prediction.They are:

1. Technological factor
2. Financial factor
3. Supply-demand factor.

10. YOUR SOLUTION — SL

Our solution involves applying Neural Networks to predict the Crude Oil Price. Time series analysis uses the previous history of crude oil prices to predict future prices. RNN(Recurrent Neural Network) with LSTM(Long Short Term Memory) is used to achieve the task.

8. CHANNELS OF BEHAVIOUR

Stakeholders can use this model to analyze future prices of crude oil and take prudent decisions. — CH

Identify strong TR & EM

4. EMOTIONS: BEFORE / AFTER

Before: confusion, anxiety

After: confidence

EM