

## Ideation Phase Literature Survey & Idea Prioritization Template

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Team ID	PNT2022TMID25121
Project Name	Project - Crude Oil Price Prediction
Maximum Marks	4 Marks

### LITERATURE SURVEY

We did a survey over the possible sources that we could access. In our exploration, we did find the authors.

Authors: Manel Hamdi and Chaker Aloui proposed the literature on forecasting the black gold price is vast. This paper provides a literature review on the various techniques that have been used to forecast crude oil price. They mainly focused on the researches that have utilized artificial neural network models in their forecasting study. Therefore, a detailed description of this model was presented in the paper[1].

The goal of this article is to review the existing literature on crude oil price forecasting. They categorized the existing forecasting techniques into the two main groups of quantitative and qualitative methods; and then performed an almost comprehensive survey on the available literature with respect to these two main forecasting techniques. A review on the existing literature about crude oil price forecasting. For this purpose they distinguished forecasting methods into the two main techniques of quantitative and qualitative techniques [2].

In this paper [3], they develop a new research framework for core influence factors selection and forecasting. Firstly, this paper assesses and selects core influence factors with the elastic-net regularized generalized linear Model (GLMNET), spike-slab lasso method, and Bayesian model average (BMA). Secondly, the new machine learning method long short-term Memory Network (LSTM) is developed for crude oil price forecasting. Then six different forecasting techniques, random walk (RW), autoregressive integrated moving average models (ARMA), elman neural Networks (ENN), ELM Neural Networks (EL), walvet neural networks (WNN) and generalized regression neural network Models (GRNN) were used to forecast the price. Finally, we compare and analyze the different results with root mean squared error (RMSE), mean absolute percentage error (MAPE), directional symmetry (DS). This empirical results show that the variable selection-LSTM method outperforms the benchmark methods in both level and directional forecasting accuracy [3].

The following price forecasting techniques have been covered: (i) artificial neural

network, (ii) support vector machine, (iii) wavelet, (iv) genetic algorithm, and (v) hybrid systems. In order to investigate the state of artificial intelligent models for oil price forecasting, thirty five research papers (published during 2001 to 2013) had been reviewed in form of table (for ease of comparison) based on the following parameters: (a) input variables. (b) input variables selection method, (c) data characteristics (d) forecasting accuracy and (e) model architecture. This review reveals procedure of AI methods used in complex oil price related studies. The review further extended above overview into discussions regarding specific shortcomings that are associated with feature selection for designing input vector, and then concluded with future insight on improving the current state-of-the-art technology[4].

Oil embodies a vital role in the world economy as the backbone and origin of numerous industries. It is an important source of energy representing an indispensable raw material and as a major component in many manufacturing processes and transportation. Oil price suffer from high volatility and fluctuations. In global markets, it is the most active and heavily traded commodity. Recently many studies emerged to discuss the problem of predicting oil prices and seeking to access to the best outcomes. Despite these attempts there were no enough studies that could be used as a reference covering all aspects of the problem. In this research, a comprehensive survey covering the previous methods and some results and experiments are presented with a focus on and maintaining the necessary steps when predicting oil prices[5].

#### References:

1. Manel Hamdi & Chaker Aloui, 2015. "Forecasting Crude Oil Price Using Artificial Neural Networks: A Literature Survey," *Economics Bulletin*, AccessEcon, vol. 35(2), pages 1339-1359.
2. Bashiri Behmiri, Niaz and Pires Manso, José Ramos, *Crude Oil Price Forecasting Techniques: A Comprehensive Review of Literature* (June 6, 2013).
3. Quanying Lu, Shaolong Sun, Hongbo Duan & Shouyang Wang, *Analysis and forecasting of crude oil price based on the variable selection-LSTM integrated model: Proceedings of the Energy Informatics.Academy Conference Asia 2021*
4. Sehgal, N.; Pandey, K.K. Artificial intelligence methods for oil price forecasting: A review and evaluation. *Energy Syst.*2015,6,479–506.
5. Dietterich, T. G., "Ensemble methods in machine learning". In *Multiple classifier systems* pp. 1-15, Springer Berlin Heidelberg, 2000