This paper focuses on the efficiency of the crude oil market and forecasting crude oil returns using news sentiments. We construct a weighted event sentiment score (WESS) for each news article to capture the novelty and potential impact of the news. Moreover, this paper designs a framework to capture the dynamic of news and the market and proposes methods to test efficient market hypotheses. Experiment results show that the market is efficient and unpredictable with respect to support vector machines and random forests. In contrast, the market exhibits inefficiency and predictability while using long short-term memory recurrent neural networks. However, incorporating sentiment data does not help improve model performance in most experimental settings.