

UNIVERSITI TEKNOLOGI MARA MALAYSIAN

**SENTIMENT ANALYSIS OF CONSUMER
BEHAVIOR ON PETROLEUM AND DIESEL
PRICE FLUCTUATIONS IN MALAYSIA USING
SUPPORT VECTOR MACHINE**

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ABSTRACT

The fluctuating prices of petroleum and diesel have long presented significant challenges to economic stability and consumer confidence in Malaysia. This study was motivated by the need to better understand how such price volatility influences consumer behavior and sentiment, particularly in a market where fuel costs directly affect household budgets and transportation decisions. A new approach has been taken by using a Support Vector Machine (SVM) based classification model to perform sentiment analysis on user-generated data primarily collected from social media platforms. This study implements a structured three-phase framework that begins with a comprehensive data collection and preprocessing stage, where raw text data is cleaned, tokenized, and vectorized to prepare for analysis. In the design and implementation phase, the SVM model was developed and fine-tuned to classify sentiment as positive or negative, with performance evaluated using metrics such as accuracy, precision, recall, and F1-score. The best-performing model, employing a SMOTE re-sampling technique with a 90:10 training-testing split, achieved an accuracy of 86.00%, with a precision of 89.00%, a recall of 84.00%, and an F1-score of 85.00%, demonstrating its effectiveness in distinguishing consumer sentiment. These findings confirm that SVM-based sentiment analysis is a reliable tool for capturing subtle user reactions to changes in fuel prices. Furthermore, this study emphasizes the potential to extend this work through the integration of additional machine learning techniques and more diverse data sources, paving the way for real-time sentiment monitoring and enhanced predictive analytics in energy market research. The insights obtained from this study provide a valuable foundation for policymakers and industry stakeholders to formulate data-driven strategies that address the economic impacts of fuel price fluctuations.

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