

Public Sentiment Analysis on Infrastructure and Amenities in Pekanbaru City Using Support Vector Machine (SVM) Algorithm Based on Twitter Data

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Abstract

The development of infrastructure and the provision of urban amenities are essential elements in improving the quality of life in Pekanbaru City, which is experiencing rapid urban growth. Conventional evaluations of public perception are often constrained by time and cost, therefore Twitter (X) is utilized as an alternative data source to capture public opinions in real time. This study aims to analyze public sentiment toward infrastructure and amenities in Pekanbaru City using the Support Vector Machine (SVM) algorithm. The dataset consists of 3,743 Twitter comments collected through a web scraping technique. The data were processed through several stages, including cleaning, case folding, tokenization, normalization, stopword removal, stemming, and location extraction using a rule-based Named Entity Recognition (NER) approach. Data labeling was conducted using a hybrid labeling method, combining manual validation and keyword-based automatic labeling. Text features were represented using the TF-IDF weighting method. The experimental results show that the SVM model achieved an accuracy of 89,20%, with a precision of 0.89, recall of 0.89, and an F1-score of 0.89. The sentiment distribution is dominated by Neutral (49.0%), followed by Positive (36.9%) and Negative (14.1%) sentiments. These findings indicate that public perception of urban infrastructure and amenities in Pekanbaru tends to be neutral to positive. This research is expected to serve as a reference for local governments in formulating more responsive and data-driven urban development policies.

Keywords: *Sentiment Analysis, Support Vector Machine, Twitter, Pekanbaru Infrastructure, TF-IDF.*