

Analisis sentimen berbasis aspek pada kualitas layanan mobile banking menggunakan metode machine learning. studi kasus: LINE Bank by Hana Bank = Aspect-based sentiment analysis on mobile banking service quality using machine learning methods: a case study of LINE Bank by Hana Bank

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Abstrak

Pertumbuhan pesat transaksi digital di Indonesia mendorong transformasi digital pada perbankan konvensional dan digital. Layanan bank digital sepenuhnya mengandalkan kemudahan akses melalui aplikasi mobile banking. LINE Bank, sebagai bank digital dari Hana Bank, memerlukan alat ukur kepuasan pelanggan yang sesuai dengan karakteristik bank digital tanpa bergantung pada survei di kantor cabang. Penelitian ini mengukur kepuasan pelanggan dengan menganalisis ulasan pengguna di mobile app stores menggunakan analisis sentimen dan faktor kualitas layanan Shankar. Proses ini melibatkan algoritma machine learning, seperti Logistic Regression, Random Forest, dan SVM. Tahapan penelitian meliputi ekstraksi data ulasan, pelabelan sentimen, preprocessing, ekstraksi fitur, klasifikasi model, dan evaluasi performa menggunakan F1-score karena distribusi data yang tidak merata. Dari 7.749 ulasan (96,36% dari Google Play Store dan 3,64% dari Apple App Store), penelitian menemukan bahwa pelanggan puas pada aspek Convenience, tetapi tidak puas pada aspek Navigation, Customer Support, Privacy and Security, dan Efficiency. Algoritma SVM menunjukkan performa terbaik dengan F1-score 0,884 untuk klasifikasi sentimen dan 0,715 untuk kualitas layanan menggunakan 10-Fold Cross Validation. Penelitian ini merekomendasikan SVM sebagai model efektif untuk mengukur kepuasan pelanggan berbasis analisis sentimen dan faktor kualitas layanan mobile banking Shankar. Hasil penelitian ini dapat membantu bank menangani keluhan nasabah, meningkatkan fitur layanan, dan memperbaiki layanan. Penelitian selanjutnya disarankan memperkaya kosa kata untuk tahapan normalisasi, menerapkan multi-lingual preprocessing, dan menganalisis hubungan semantik antar kata.

..... The rapid growth of digital transactions in Indonesia has driven digital transformation in both conventional and digital banking. Digital banking services rely entirely on easy access through mobile banking applications. LINE Bank, a digital bank by Hana Bank, requires a customer satisfaction measurement tool tailored to the characteristics of digital banking without relying on branch office surveys. This study measures customer satisfaction by analyzing user reviews from mobile app stores using sentiment analysis and Shankar's service quality factors. The process involves machine learning algorithms, such as Logistic Regression, Random Forest, and SVM. The research stages include data extraction of user reviews, sentiment labeling, preprocessing, feature extraction, model classification, and performance evaluation using F1-score due to the imbalance distribution of dataset. From 7,749 reviews (96.36% from Google Play Store and 3.64% from Apple App Store), the study found that customers were satisfied with the Convenience aspect but dissatisfied with Navigation, Customer Support, Privacy and Security, and Efficiency. The SVM algorithm demonstrated the best performance, achieving an F1-score of 0.884 for sentiment classification and 0.715 for service quality classification using 10-Fold Cross Validation. This study recommends SVM as the most effective model for measuring customer satisfaction based on

sentiment analysis and mobile banking service quality factors by Shankar. The findings can assist banks in addressing customer complaints, improving features, and enhancing service quality. Future research is suggested to enrich vocabulary for normalization, implement multilingual preprocessing, and analyze semantic relationships between words.