

RANCANG BANGUN SISTEM KLASIFIKASI PRODUK BERDASARKAN STATUS HALAL BERBASIS *WEB* MENGUNAKAN METODE *NAIVE BAYES*

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ABSTRAK

Tujuan penelitian ini adalah untuk membuat dan membangun sistem klasifikasi status halal produk yang menggunakan web dengan algoritma *Naïve Bayes*. Latar belakang penelitian didasari oleh pentingnya jaminan kehalalan produk bagi masyarakat Muslim dan kompleksitas proses sertifikasi manual. Data yang digunakan berasal dari *Open Food Facts* yang berisi daftar bahan produk makanan kemasan. Tahapan *preprocessing* data meliputi *cleaning*, *case folding*, dan pembobotan data. Implementasi dan evaluasi model *Naïve Bayes* dilakukan dengan menerapkan metrik *accuracy*, *F1-score*, *recall*, dan *precision*. Penelitian menunjukkan bahwa hasil model dapat mencapai *accuracy* sebesar 93,72%, *F1-score* sebesar 88,96%, *recall* sebesar 89,64%, dan *precision* sebesar 93,94%. Sistem *web* yang dijalankan secara lokal kemudian dibangun menggunakan *framework Flask* untuk mengintegrasikan model yang telah dilatih. Pengujian fungsional sistem membuktikan bahwa sistem dapat mengklasifikasikan status halal berdasarkan input daftar bahan dengan baik. Penelitian ini diharapkan dapat menjadi dasar pengembangan sistem verifikasi halal yang lebih kompleks dan terintegrasi di masa depan.

Kata kunci: *Naïve Bayes*, Klasifikasi, Produk, Halal

DESIGNING A WEB-BASED PRODUCT CLASSIFICATION SYSTEM BASED ON HALAL STATUS USING THE NAIVE BAYES METHOD

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ABSTRACT

The purpose of this study is to create and develop a web-based halal product status classification system through the use of the Naïve Bayes algorithm. The background of this study is based on the importance of product halal assurance for the Muslim community and the complexity of the manual certification process. The data used comes from Open Food Facts, which contains a list of food product ingredients. The data preprocessing stages include cleaning, case folding, and data weighting. The implementation and evaluation of the Naïve Bayes model were carried out by applying the metrics of accuracy, F1-score, recall, and precision. The research shows that the model results can achieve an accuracy of 93.72%, an F1-score of 88.96%, a recall of 89.64%, and a precision of 93.94%. A locally run web system was then built using the Flask framework to integrate the trained model. Functional testing of the system proved that it could classify halal status based on ingredient list input properly. This research is expected to serve as the basis for the development of more complex and integrated halal verification systems in the future.

Key words: *Naïve Bayes, Classification, Product, Halal*