

ABSTRAK

Stunting merupakan salah satu permasalahan kesehatan yang dapat memengaruhi pertumbuhan fisik dan perkembangan kognitif anak. Proses identifikasi risiko stunting yang masih dilakukan secara manual membutuhkan waktu relatif lama dan berpotensi menimbulkan kesalahan dalam pengambilan keputusan. Penelitian ini bertujuan mengembangkan Sistem Pendukung Keputusan (SPK) risiko stunting berbasis web dengan membandingkan performa algoritma Naïve Bayes dan Random Forest dalam mengklasifikasikan risiko stunting pada balita. Data yang digunakan berupa data antropometri balita dari UPTD Puskesmas Wadaslintang 1. Tahapan pengolahan data meliputi data cleaning, feature engineering dengan penambahan Body Mass Index (BMI), transformasi data, seleksi fitur menggunakan Information Gain, dan normalisasi Min-Max. Dataset dibagi menjadi 70% data training, 15% data validation, dan 15% data testing. Pengujian dilakukan menggunakan variasi 3 fitur, 5 fitur, 7 fitur, dan seluruh fitur, sedangkan pada Random Forest digunakan variasi $n_estimators$ 30, 50, dan 100. Evaluasi dilakukan menggunakan metrik Accuracy, Precision, Recall, dan F1-Score. Hasil evaluasi akhir pada data testing menunjukkan bahwa Random Forest dengan seluruh fitur dan $n_estimator$ 100 memperoleh Accuracy sebesar 97,01%, Precision 97,07%, Recall 97,01%, dan F1-Score 97,03%. Sementara itu, Naïve Bayes dengan 3 fitur memperoleh Accuracy 73,89%, Precision 80,75%, Recall 73,89%, dan F1-Score 63,36%. Berdasarkan hasil tersebut, Random Forest dipilih sebagai model utama pada SPK. Hasil pengujian usability memperoleh indeks sebesar **93%** dan termasuk dalam kategori Sangat Setuju, yang menunjukkan tingkat penerimaan pengguna yang sangat baik.

Kata Kunci: Stunting, Sistem Pendukung Keputusan, Naïve Bayes, Random Forest, Information Gain.

ABSTRACT

Stunting is a health problem that can affect children's physical growth and cognitive development. The manual process of identifying stunting risk requires considerable time and may lead to errors in decision-making. This study aims to develop a web-based Decision Support System (DSS) for stunting risk by comparing the performance of Naïve Bayes and Random Forest algorithms in classifying stunting risk among children under five. The data used in this study consist of anthropometric data obtained from UPTD Puskesmas Wadaslintang 1. The data processing stages include data cleaning, feature engineering by adding Body Mass Index (BMI), data transformation, feature selection using Information Gain, and Min-Max normalization. The dataset was divided into 70% training data, 15% validation data, and 15% testing data. The models were evaluated using four feature scenarios consisting of 3 features, 5 features, 7 features, and all features, while Random Forest was additionally evaluated using 30, 50, and 100 n-estimators. Model performance was measured using Accuracy, Precision, Recall, and F1-Score. The final evaluation on the testing data showed that Random Forest using all features and 100 n-estimators achieved an Accuracy of 97.01%, Precision of 97.07%, Recall of 97.01%, and F1-Score of 97.03%. Meanwhile, Naïve Bayes using 3 features achieved an Accuracy of 73.89%, Precision of 80.75%, Recall of 73.89%, and F1-Score of 63.36%. Based on these results, Random Forest was selected as the main model for the DSS. The usability evaluation achieved an index score of 93%, which falls into the Strongly Agree category and indicates a very high level of user acceptance.

Keywords: *Stunting*, Decision Support System, Naïve Bayes, Random Forest, Information Gain.