ABSTRAK

Muhammad Ihsan Hasibuan NIM 4193550028 (2025). Implementasi Algoritma C4.5 Berbasis Website Dalam Menentukan Kelayakan Penerima Bantuan Keluarga Kurang Mampu (Studi Kasus: Desa Dolok Merawan Kecamatan Dolok Merawan.

Penentuan penerima Bantuan Pangan Non Tunai (BPNT) di Desa Dolok Merawan masih menghadapi kendala dalam proses pendataan manual, seperti keterbatasan penyebaran informasi antar dusun, rendahnya efisiensi pendataan, serta potensi ketidaksesuaian penerima dengan kriteria yang ditetapkan. Penelitian ini bertujuan mengimplementasikan algoritma C4.5 dalam sistem pendukung keputusan berbasis website untuk membantu perangkat desa menentukan kelayakan penerima BPNT secara lebih objektif dan terukur. Data yang digunakan merupakan data masyarakat Desa Dolok Merawan tahun 2024 sebanyak 1.020 record dengan kriteria jumlah tanggungan, status rumah, daya listrik, dan pendapatan. Pengembangan sistem menggunakan metode waterfall, sedangkan pengujian fungsional dilakukan dengan black box testing. Proses analisis data dan pembentukan model memanfaatkan Python beserta library pendukung. Hasil evaluasi model dengan pembagian data 80:20 menunjukkan akurasi sebesar 90% serta nilai precision, recall, dan F1-score sebesar 0,90, sehingga sistem dinilai mampu mengklasifikasikan kelayakan penerima BPNT secara efektif dan dapat digunakan sebagai pendukung pengambilan keputusan di tingkat desa.

Kata Kunci: BPNT, Sistem Pendukung Keputusan, C4.5, *Decision Tree, Website*.

ABSTRACT

Muhammad Ihsan Hasibuan NIM 4193550028 (2025). Implementasi Algoritma C4.5 Berbasis Website Dalam Menentukan Kelayakan Penerima Bantuan Keluarga Kurang Mampu (Studi Kasus: Desa Dolok Merawan Kecamatan Dolok Merawan.

The determination of recipients for Non-Cash Food Assistance (BPNT) in Dolok Merawan Village still faces challenges in manual data collection, including limited dissemination of information between hamlets, low efficiency in data processing, and the potential mismatch between recipients and established eligibility criteria. This study aims to implement the C4.5 algorithm in a website-based decision support system to assist village officials in determining BPNT eligibility more objectively and systematically. The data used consist of 1,020 community records from Dolok Merawan Village in 2024, with criteria including number of dependents, housing status, electricity capacity, and income. The system was developed using the waterfall method, while functional testing was conducted through black box testing. Data analysis and model development were carried out using Python and supporting libraries. Evaluation results using an 80:20 data split showed an accuracy of 90%, with precision, recall, and F1-score each reaching 0.9, indicating that the system is capable of effectively classifying BPNT eligibility and can be utilized as a decision-making support tool at the village level.

***Keywords**: BPNT, Decision Support System, C4.5, Decision Tree, Website.*