ABSTRAK

Miftahul Janna Tunnisa Lubis, NIM 4193550030 (2025). Prediksi Banjir Daerah Aliran Sungai Wampu Dengan Menggunakan Metode Simple Additive Weighthing.

Banjir merupakan salah satu bencana alam yang sering terjadi di wilayah Daerah Aliran Sungai (DAS) Wampu khususnya di Kecamatan Bahorok. Risiko banjir dipengaruhi oleh beberapa faktor seperti curah hujan, kemiringan lereng, perubahan penggunaan lahan, dan kedalaman sungai. Kurangnya sistem analisis yang terstruktur menyebabkan sulitnya menentukan wilayah prioritas penanganan risiko banjir secara objektif. Oleh karena itu diperlukan suatu Sistem Pendukung Keputusan (SPK) untuk menentukan tingkat risiko banjir. Penelitian ini bertujuan untuk menentukan kriteria dan bobot risiko banjir, menerapkan metode Simple Additive Weighting (SAW), serta menganalisis tingkat akurasi metode SAW dalam menentukan risiko banjir di Kecamatan Bahorok. Data penelitian terdiri dari 18 desa dengan empat kriteria yaitu curah hujan, kemiringan lereng, perubahan penggunaan lahan, dan kedalaman sungai. Proses analisis dilakukan melalui tahapan pembobotan kriteria, pembentukan matriks keputusan, normalisasi data, perhitungan nilai preferensi, serta pemeringkatan risiko banjir. Hasil penelitian menunjukkan adanya klasifikasi tingkat risiko banjir kategori tinggi, sedang, dan rendah. Desa dengan nilai preferensi tertinggi memiliki tingkat risiko banjir paling besar. Hasil evaluasi model menunjukkan metode SAW memiliki tingkat akurasi sekitar **90%** dalam menentukan klasifikasi risiko banjir. Berdasarkan hasil tersebut dapat disimpulkan bahwa metode SAW dapat digunakan sebagai Sistem Pendukung Keputusan dalam menentukan risiko banjir serta membantu rekomendasi wilayah prioritas penanganan banjir di Kecamatan Bahorok.

Kata kunci: Risiko Banjir, Sistem Pendukung Keputusan, Simple Additive Weighting, Bahorok.

ABSTRACT

Miftahul Janna Tunnisa Lubis, NIM 4193550030 (2025). Flood Prediction in the Wampu Watershed Using the Simple Additive Weighting Method.

Flood is one of the natural disasters that frequently occurs in the Wampu Watershed (DAS Wampu), especially in Bahorok District. Flood risk is influenced by several factors such as rainfall, slope gradient, land use changes, and river depth. The problem in this study is the absence of a decision support system that can objectively determine flood risk levels. This study aims to determine the criteria and weights of flood risk, apply the Simple Additive Weighting (SAW) method, and analyze the accuracy level of the SAW method in determining flood risk. The method used in this research is the Simple Additive Weighting (SAW) method through several stages including criteria weighting, decision matrix construction, data normalization, preference value calculation, and alternative ranking. The research data consists of 18 villages with four criteria: rainfall, slope gradient, land use change, and river depth. The results show the classification of flood risk levels into high, medium, and low categories based on the obtained preference values. Villages with the highest preference values indicate a higher level of flood vulnerability compared to other villages. The model evaluation results indicate that the SAW method has an accuracy level of approximately **90%** in determining flood risk classification. Based on these results, it can be concluded that the SAW method can be used as a decision support system to determine flood risk levels and provide recommendations for priority flood mitigation areas in Bahorok District.

Keywords: Flood Risk, Decision Support System, Simple Additive Weighting, Bahorok District.