

ABSTRAK

Penentuan prioritas program bantuan di Desa Sungai Rebo masih dilakukan secara manual sehingga berpotensi menimbulkan subjektivitas dalam menentukan warga yang berhak menerima bantuan. Kondisi tersebut dapat menyebabkan bantuan yang diberikan kurang tepat sasaran. Oleh karena itu, diperlukan suatu metode yang mampu membantu proses pengelompokan warga secara lebih objektif berdasarkan kondisi sosial ekonomi masyarakat. Penelitian ini bertujuan untuk menerapkan metode *K-Means Clustering* dalam mengelompokkan data warga guna menentukan prioritas program bantuan di Kantor Desa Sungai Rebo. Variabel yang digunakan meliputi status produktivitas, jumlah tanggungan, pendidikan terakhir, status tempat tinggal, dan riwayat bantuan sosial. Sistem dikembangkan menggunakan metode *Rational Unified Process* (RUP) yang terdiri dari empat tahapan, yaitu *inception*, *elaboration*, *construction*, dan *transition*. Proses pengelompokan dilakukan dengan menerapkan algoritma K-Means untuk mengelompokkan warga berdasarkan tingkat kemiripan karakteristik yang dimiliki. Hasil penelitian menunjukkan bahwa sistem mampu mengelompokkan data warga ke dalam tiga *cluster*, yaitu prioritas tinggi, prioritas sedang, dan prioritas rendah. Kualitas hasil pengelompokan dievaluasi menggunakan *Silhouette Score*, sedangkan fungsionalitas sistem diuji menggunakan *Black Box Testing*. Berdasarkan hasil pengujian, sistem yang dibangun mampu membantu proses pengambilan keputusan dalam menentukan prioritas program bantuan secara lebih objektif, tepat sasaran, dan sesuai dengan kondisi masyarakat.

Kata Kunci: *K-Means Clustering*, *Data Mining*, Pengelompokan Warga, Prioritas Program Bantuan, *Rational Unified Process* (RUP).

ABSTRACT

The determination of assistance program priorities in Sungai Rebo Village is still carried out manually, which may lead to subjectivity in identifying residents who are eligible to receive assistance. This condition can result in aid distribution that is not optimally targeted. Therefore, a method is needed to support a more objective classification of residents based on their socio-economic conditions. This study aims to implement the K-Means Clustering method to classify resident data in determining the priority of assistance programs at the Sungai Rebo Village Office. The variables used include productivity status, number of dependents, educational level, housing status, and social assistance history. The system was developed using the Rational Unified Process (RUP) methodology, which consists of four phases: inception, elaboration, construction, and transition. The clustering process was carried out by applying the K-Means algorithm to group residents based on the similarity of their characteristics. The results indicate that the system is capable of classifying residents into three clusters: high priority, medium priority, and low priority. The quality of the clustering results was evaluated using the Silhouette Score, while the system functionality was tested using Black Box Testing. Based on the testing results, the developed system is able to support decision-making in determining assistance program priorities more objectively, accurately, and in accordance with community conditions.

Keywords: K-Means Clustering, Data Mining, Resident Clustering, Assistance Program Prioritization, Rational Unified Process (RUP).