ABSTRACT

Kabupaten Banyumas in Central Java Province has great potential in village development, utilizing the Village Potential Data (PODES) survey data from the Central Statistics Agency (BPS) as the basis for understanding its socio-economic dynamics. However, the challenge of non-response in remote areas causes outliers or noise in the data. To overcome this problem, the DBSCAN (Density-Based Spatial Clustering of Applications with Noise) algorithm is used, which is able to detect data patterns based on density while seeing data that includes noise. The results showed that the clustering of villages in Kabupaten Banyumas resulted in three main clusters, with Cluster -1 as an outlier category or a village that requires attention from the government. Evaluation using Silhouette Score shows that the fifth experiment with parameters Eps = 240 and MinPts = 3 produces a value of 0.5153, which is the best result compared to other experiments. The villages included in cluster 1 are Pageraji, Ledug, Ajibarang Kulon, Kedungwuluh Kidul, Jompo Kulon, and Sambeng Wetan. Then the villages included in cluster -1 are Klapagading Kulon, Bobosan, Pejogol, Petahunan, Datar, and Karangjati. This result shows that these parameters provide the most optimal clustering model from the other experiments. In conclusion, the use of DBSCAN is quite good in clustering villages based on socioeconomic characteristics. Villages detected as cluster -1 require special attention in the formulation of development policies so that socioeconomic inequality can be minimized. Therefore, this method is expected to provide good clustering results as a basis for formulating targeted village development policies.

Kata Kunci: *BPS, Cluster, DBSCAN, PODES, Socioeconomic.*