

## ABSTRACT

Educational coverage levels in Java Island still face disparities across regencies/municipalities, leading to unequal human resource quality among regions. These differences necessitate regional clustering as a basis for more targeted educational development policies. This study aims to cluster regencies/municipalities in Java based on indicators forming educational coverage levels, including the availability of educational facilities and educational attainment, using the Fuzzy *C-Means* (FCM) method and Particle Swarm Optimization (PSO). FCM is employed because it can handle data without clear boundaries between clusters, while PSO is used to optimize the initial cluster centers to avoid local optimum solutions. Cluster quality is evaluated using the Partition Coefficient (PC) and Modified Partition Coefficient (MPC). The results show that the FCM-PSO method converges at the 27th iteration with an optimal number of three clusters, producing a PC value of 0.6760 and an MPC value of 0.5141, indicating a more stable partition quality and reduced bias toward the number of clusters compared to other scenarios. The first cluster represents regions with high educational coverage levels, the second cluster indicates regions with relatively good facility support but low educational attainment, and the third cluster represents regions with moderate educational coverage levels. These findings are expected to support more targeted educational policy formulation, such as providing financial assistance for students in areas with suboptimal educational attainment.

**Keywords:** Educational Coverage, Java Island, Disparities, Fuzzy *C-Means*, Particle Swarm Optimization