

ABSTRACT

The rapid development of information and communication technology is accelerating digital transformation, affecting various aspects of people's lives. Digital transformation requires the support of human resources with adequate digital competencies. The Ministry of Communication and Digital Affairs developed the Indonesian Digital Society Index to measure the level of digital maturity of communities across different regions. Differences in the Indonesian Digital Society Index achievements among regions indicate the need for further analysis, such as clustering, to capture patterns of similarity in regional characteristics. This can support the formulation of more targeted digital transformation strategies and human resource development efforts that are aligned with local needs. This study compares the performance of Fuzzy C-Means (FCM) and Gaussian Mixture Model (GMM) in clustering regencies/cities in West Java based on the Digital Society Index. The evaluation is conducted using the Silhouette Coefficient. For FCM, the highest Silhouette Coefficient was obtained at $k = 2$ (0.3611). Meanwhile, GMM produces the optimal number of clusters at $k = 2$ with a Silhouette Coefficient value of 0.3673. Based on validation indices, GMM demonstrates better clustering performance than FCM. The profiling results using the best-performing method, namely Gaussian Mixture Model, produce two clusters. Cluster 1 consists of 19 regencies/cities, while cluster 2 consists of 8 regencies/cities, where each cluster has distinct characteristics.

Keywords: Digital Society Index, Clustering, Fuzzy C-Means, Gaussian Mixture Model, Silhouette Coefficient