ABSTRACT

Interprovincial welfare disparities in Indonesia remain a significant challenge in achieving the Sustainable Development Goals (SDGs), particularly within the welfare dimension. Provincial data show considerable variation and significant differences across indicators of food security, health, education, and access to basic services, with several provinces identified as outliers. These conditions require a clustering method that is robust to outliers and capable of capturing the structure of multidimensional data. This study classifies 38 provinces in Indonesia using eight SDG indicators related to welfare in 2024. The Partitioning Around Medoids (PAM) algorithm is applied because it uses actual observations as cluster centers (medoids), making it more robust to outliers than mean based methods. The optimal number of clusters is determined using the Gap Statistic. The results show that the optimal solution is achieved at $K = 2$ with a Gap value of 0.55, resulting in two clusters. Cluster 1 represents provinces with relatively better welfare conditions, while Cluster 2 consists of provinces with more vulnerable conditions that require priority policy intervention. These findings provide an empirical basis for more targeted development policies to support the achievement of the SDGs.

Keywords: Sustainable Development Goals, Welfare, Clustering, Partitioning Around Medoids, Gap Statistic