ABSTRACT

Agriculture is a vital sector in the economy of Semarang Regency, contributing significantly to its Gross Regional Domestic Product (GRDP). However, agricultural potential varies across districts, requiring comprehensive analysis. This study aims to apply the *K-Means Clustering* method to classify 19 districts in Semarang Regency based on agricultural indicators in 2024, including agricultural land area, maize productivity, groundnut productivity, and cassava productivity. Secondary data were obtained from the Semarang Regency in Figures 2025 published by the Central Bureau of Statistics. Data suitability was tested using the Kaiser-Meyer-Olkin (KMO) measure and multicollinearity test, followed by determining the optimal number of *cluster*s using the Silhouette method. The results indicate that seven optimal *cluster*s were formed with a silhouette score of 0,3651792. Each *cluster* demonstrated distinct characteristics, such as districts with the largest land area but low groundnut productivity, and districts with limited land but high cassava productivity. These findings provide valuable insights for local governments in formulating data-driven policies, optimizing resource allocation, and enhancing agricultural development in Semarang Regency.

Keywords: *K-Means Clustering*, agriculture, Semarang Regency, *cluster* analysis.