PERBANDINGAN METODE *K-MEANS* DAN *K-MEDOIDS* DALAM KLASTERISASI SMA/MA DI PROVINSI BALI BERDASARKAN NILAI UJIAN NASIONAL

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ABSTRAK

Ujian Nasional (UN) adalah kegiatan pengukuran dan penilaian pencapaian standar kompetensi lulusan secara nasional pada mata pelajaran tertentu. Berasarkan hasil UN, pemerintah bisa mengetahui kemajuan belajar peserta didik di seluruh Indonesia. Penelitian ini mengelompokkan SMA/MA di Bali manjadi klaster C1 (pencapaian nilai UN kurang), C2 (pencapaian nilai UN cukup), C3 (pencapaian nilai UN baik), dan C4 (pencapaian nilai UN sangat baik) berdasarkan nilai UN tahun 2019. Metode yang diterapkan adalah metode *K-Means* merupakan metode klasterisasi yang mengelompokkan data berdasarkan titik pusat klaster (*centroid*) terdekat dengan data dan *K-Medoids* merupakan salah satu metode partisi, karena menggunakan objek yang paling terpusat (*medoids*) di klaster serta menjadi pusat klaster dari nilai rata-rata objek dalam sebuah klaster, sementara pengujian validitas hasil klaster menggunakan *Silhouette Coefficient* untuk mengukur seberapa baik letak objek dalam klaster. Jenis penelitian ini adalah penelitian penambangan data yang bertujuan untuk membandingkan hasil klasterisasi SMA/MA di Provinsi Bali berdasarkan nilai ujian nasional dengan metode *K-Means* dan *K-Medoids*. Hasil penelitian ini menunjukan bahwa dengan metode *K-Means* menunjukan bahwa sebanyak 56 sekolah masuk kedalam klaster C1, sebanyak 172 sekolah masuk kedalam klaster C2, sebanyak 82 sekolah masuk kedalam klaster C3, dan sebanyak 62 sekolah masuk kedalam klaster C4. Hasil penelitian menunjukan bahwa dengan metode *K-Medoids* sebanyak 57 sekolah masuk kedalam klaster C1, sebanyak 134 sekolah masuk kedalam klaster C2, sebanyak 150 sekolah masuk kedalam klaster C3, dan sebanyak 33 sekolah masuk kedalam klaster c4. Berdasarkan nilai *Silhouette Coefficient* menunjukkan metode yang lebih baik untuk klasterisasi SMA/MA di Provinsi Bali berdasarkan nilai ujian nasional adalah metode *K-Medoids*.

Kata Kunci: klasterisasi, *k-means*, *k-medoids*, *silhouette coefficient*

COMPARISON OF K-MEANS AND K-MEDOIDS METHODS IN SMA/MA CLASTERIZATION IN BALI PROVINCE BASED ON NATIONAL EXAM VALUE

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ABSTRACT

The National Examination (UN) is an activity to measure and assess the achievement of graduate competency standards nationally in certain subjects. Based on the results of the National Examination, the government can find out the learning progress of students throughout Indonesia. This study groups SMA/MA in Bali into clusters C1 (less achievement of UN scores), C2 (achievement of sufficient UN scores), C3 (good achievement of UN scores), and C4 (very good achievement of UN scores) based on 2019 National Examination scores. Method The K-Means method is a clustering method that groups data based on the cluster center point (centroid) closest to the data and K-Medoids is one of the partitioning methods, because it uses the most centralized object (medoids) in the cluster and becomes the center of the cluster of values. the average object in a cluster, while testing the validity of the cluster results using the Silhouette Coefficient to measure how well the objects in the cluster are located. This type of research is a data mining research that aims to compare the results of clustering SMA/MA in Bali Province based on national exam scores using the K-Means and K-Medoids methods. The results of this study indicate that the K-Means method shows that as many as 56 schools are included in cluster C1, as many as 172 schools are included in cluster C2, as many as 82 schools are included in cluster C3, and as many as 62 schools are included in cluster C4. The results showed that with the K-Medoids method, 57 schools were included in cluster C1, as many as 134 schools were included in cluster C2, as many as 150 schools were included in cluster C3, and as many as 33 schools were included in cluster C4. Based on the value of the Silhouette Coefficient, it shows that a better method for clustering SMA/MA in Bali Province based on national exam scores is the K-Medoids method.

Keywords: clustering, k-means, k-medoids, silhouette coefficient