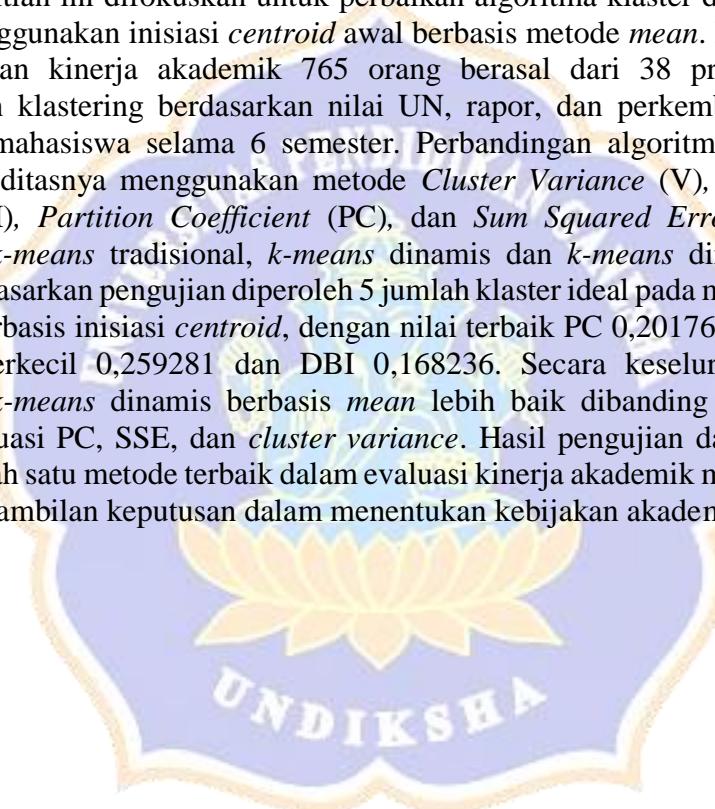# ABSTRAK

Ariasa, Komang (2019), Pengembangan Algoritma Klaster Dinamis Pada K-Means Dalam Pengelompokan Kinerja Akademik Mahasiswa (Studi Kasus: Universitas Pendidikan Ganesha). Tesis, Ilmu Komputer, Program Pascasarjana, Universitas Pendidikan Ganesha.

Tesis ini sudah disetujui dan diperiksa oleh Pembimbing I : Dr. I Gede Aris Gunadi, S.Si.,M.Kom. dan Pembimbing II : Prof. Dr. I Made Candiasa, M.I.Kom.

Kata-kata kunci : *k-means*, klastering, klaster dinamis, *mean based*

Penelitian ini difokuskan untuk perbaikan algoritma klaster dinamis pada *k-means* menggunakan inisiasi *centroid* awal berbasis metode *mean*. Data penelitian menggunakan kinerja akademik 765 orang berasal dari 38 prodi Undiksha, perhitungan klastering berdasarkan nilai UN, rapor, dan perkembangan kinerja akademik mahasiswa selama 6 semester. Perbandingan algoritma terbaik diuji tingkat validitasnya menggunakan metode *Cluster Variance* (V)*, Davies Bound Index* (DBI)*, Partition Coefficient* (PC)*,* dan *Sum Squared Error* (SSE) pada algoritma *k-means* tradisional, *k-means* dinamis dan *k-means* dinamis berbasis *mean*. Berdasarkan pengujian diperoleh 5 jumlah klaster ideal pada metode *k-means* dinamis berbasis inisiasi *centroid*, dengan nilai terbaik PC 0,20176, SSE 2,15152, *variance* terkecil 0,259281 dan DBI 0,168236. Secara keseluruhan optimasi algoritma *k-means* dinamis berbasis *mean* lebih baik dibanding algoritma lain dalam evaluasi PC, SSE, dan *cluster variance*. Hasil pengujian dapat digunakan sebagai salah satu metode terbaik dalam evaluasi kinerja akademik mahasiswa serta acuan pengambilan keputusan dalam menentukan kebijakan akademik universitas.

ABSTRACT

Ariasa, Komang (2019), Development of Dynamic K-Means Clustering in Grouping Student Academic Performance (Case Study: Ganesha University of Education). Thesis, Computer Science, Post Graduate Program, Ganesha University of Education.

This thesis has been approved and examined by Supervisor I: Dr. I Gede Aris Gunadi, S.Si.,M.Kom. and Supervisor II: Prof. Dr. I Made Candiasa, M.I.Kom.

Keywords: k-means, clustering, dynamic k-means, mean based

This research is focused improved of dynamic clustering algorithm on k-means with centroid initialization using mean method. Research using 765 data academic performance came from 38 Undiksha study programs, calculation clustering based on UN scores, rapor, and the student academic performance/ IPK for 6 semesters. The best algorithm comparison is tested for validity using the Cluster Variance (V), Davies Bound Index (DBI), Partition Coefficient (PC), and Sum Squared Error (SSE) on traditional k-means, dynamic k-means and dynamic k-means with centroid initialization using mean based. The test results obtained 5 ideal number of clusters in the dynamic k-means clustering with cluster initialization, with the best value of PC 0.20176, SSE 2.15152, minimum variance 0.259281 and DBI 0.168236. Overall, the results of the optimization dynamic k-means with centroid initialization using mean based are better than other algorithms in evaluating PC, SSE, and cluster variance. The results can be used as one of the best methods in evaluating student academic performance and reference for decision making in determining university academic policy.