INTISARI

Model Sistem Evaluasi Kinerja Program Studi Berdasarkan LED K-means Clustering

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Sistem evaluasi kinerja organasisi umumnya belum memanfaatkan data dari basis data *legacy system*, akibatnya berpotensi tidak menggambarkan kinerja sesungguhnya. Evaluasi kinerja sebagian besar juga masih dilakukan dengan pendekatan tradisional, belum menerapkan ambang batas target kinerja, dan belum menganalisis aspek kuanitatif.

K-means telah digunakan untuk berbagai bidang karena menampilkan hasil analisa berbentuk pola yang mudah dipahami, memungkinkan mengenali anomali, dan dapat digunakan untuk mengevaluasi kinerja. Namun *K-mean* memiliki kelemahan, diantaranya menghasilkan *cluster* yang berkinerja rendah dari sisi kepadatan *cluster* sehingga pengguna dapat keliru menafsirkannya.

Penelitian ini mengembangkan pendekatan baru yang disebut model sistem evaluasi kinerja berdasarkan *LED K-means clustering*. Model sistem evaluasi kinerja yang dikembangkan menerapkan ambang batas target kinerja, menggunakan data dari basis data *legacy system*, dan menggunakan metode *Log LED K-means* untuk menghasilkan c*luster* yang lebih lebih baik dibandingkan metode *K-means*.

Metode *LED K-means* diuji untuk mengevaluasi kinerja program studi. Pada bagian lain, *cluster* indikator kinerja hasil *LED K-means clustering* dievaluasi menggunakan pengukuran nilai *silhouette coefficient*, *entropy*, *centre tendency*, dan *local density cluster* hasil *LED K-mean clustering*, dan membandingkannya dengan hasil *K-means*.

Metode *LED K-means* telah diuji menggunakan data set 8 indikator kinerja program studi pada STMIK Raharja. Hasil pengujian menunjukan bahwa *LED K-means* meningkatkan kinerja *K-means* dari sisi kepadatan *cluster* yang ditunjukan oleh nilai rata-rata *entropy*, *centre tendency*, dan *local density*, berturut-turut dari 2,5; 14,2 dan 16,1 menjadi 0,4; 1,5 dan 1,6 (86,06%), dan memperbaiki nilai *silhouette coeficient* dari -0,44 menjadi -0,14 (68,18%).

Kata kunci: *K-means*, *LED K-means*, evaluasi kinerja

ABSTRACT

MODEL OF PERFORMANCES EVALUATION SYSTEM FOR STUDY PROGRAMS BASED ON LED K-MEANS CLUSTERING

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Organizational performance evaluation system generally has not utilized data from legacy system database, so the result is not potential to describe the actual performance. In addition, performance evaluations are mostly still done with traditional approaches, have not yet implemented target performance thresholds, and have not yet analyzed the kuanitative aspects.

K-means has been used for many fields because it displays easily understood pattern-shaped analysis results, enables recognizing anomalies, and can be used to evaluate performance. But K-means has weaknesses, such as producing a low-performing cluster in terms of cluster density so that users can mistakenly interpret it.

This research develops a new approach called model of performance evaluation system based on LED K-means clustering. Model of performance evaluation system was developed to apply threshold performance targets, using data from database legacy systems, and using the Log Function For Euclidean Distance in K-means (LED K-means) to produced a cluster that is better than K-means.

LED K-means was tested in evaluating the performance of the study program. While the results of key performance indicators cluster LED K-means clustering was evaluated using a measurement value of silhouette coefficient, entropy, center tendency, and local density of the results of LED K-means clustering and compare them with the results of K-means.

LED K-means has been tested using data sets of 8 study programs performance indicators on STMIK Raharja. The results showing LED K-means improves the K-means performance of the cluster density shown by the average value of entropy, center tendency, and local density, they are 2.5; 14.2; and 16.1 to 0.4; 1.5; and 1.6 (86.06%), and improved the value of silhouette coeficient from -0.44 to -0.14 (68.18%).

Keywords: *K-means, LED K-means, cluster performance, performance evaluation*