

ABSTRAK

Moh. Nur Ali Afendi. 2026. Pengelompokan Kinerja Dosen Menggunakan Algoritma *X-Means* (Studi Kasus: Program Studi Teknik Informatika Unmuh Jember). Tugas Akhir. Program Sarjana. Program Studi Teknik Informatika. Universitas Muhammadiyah Jember.

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Evaluasi kinerja dosen merupakan aspek penting dalam meningkatkan mutu pendidikan tinggi. Pada Program Studi Teknik Informatika Universitas Muhammadiyah Jember, penilaian kinerja dosen masih banyak dilakukan secara manual sehingga berpotensi menimbulkan subjektivitas dan kurang efisien. Penelitian ini bertujuan untuk mengelompokkan kinerja dosen berdasarkan data internal (jumlah SKS, publikasi ilmiah, kehadiran, dan nilai rata-rata mahasiswa) serta persepsi mahasiswa melalui kuesioner menggunakan algoritma *X-Means Clustering*. Algoritma *X-Means* dipilih karena mampu menentukan jumlah *cluster* secara otomatis dengan memanfaatkan kriteria *Bayesian Information Criterion* (BIC) dan *Log-likelihood*. Tahapan penelitian meliputi pengumpulan data, pembersihan data, *normalisasi* menggunakan metode *Min-Max*, implementasi algoritma *X-Means*, serta visualisasi hasil dengan *Principal Component Analysis* (PCA). Hasil penelitian menunjukkan bahwa data kinerja dosen terbagi ke dalam 5 *cluster* dengan karakteristik berbeda, antara lain: dosen dengan kinerja tinggi dan konsisten, dosen dengan publikasi tinggi, dosen dengan penelitian aktif namun nilai mahasiswa rendah, dosen dengan kinerja rendah, serta dosen dengan kinerja stabil. Pengelompokan ini memberikan gambaran objektif mengenai variasi kinerja dosen dan dapat dijadikan acuan bagi pihak program studi dalam merancang strategi pengembangan serta evaluasi kualitas dosen secara berkelanjutan.

Kata kunci : Kinerja Dosen, Data Internal, Persepsi Mahasiswa, *X-Means Clustering*, PCA

ABSTRACT

Moh. Nur Ali Afendi. 2026. Lecturer PerFormance Using the X-Means Algorithm (Case Study: InFormatics Engineering Study Program, University of Muhammadiyah Jember). Undergraduate Thesis. Bachelor's Degree Program, InFormatics Engineering Study Program, University of Muhammadiyah Jember.

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Lecturer perFormance evaluation is a crucial aspect in improving the quality of higher education. In the InFormatics Engineering Study Program at Muhammadiyah University of Jember, lecturer perFormance assessment is still mostly carried out manually, which can lead to subjectivity and inefficiency. This study aims to cluster lecturer perFormance based on internal data (credit load, scientific publications, attendance, and students' average grades) as well as student perceptions collected through questionnaires, using the X-Means Clustering algorithm. X-Means was chosen because it can automatically determine the optimal number of clusters using Bayesian Information Criterion (BIC) and Log-likelihood. The research stages include data collection, data cleaning, normalization with the Min-Max method, implementation of the X-Means algorithm, and visualization using Principal Component Analysis(PCA). The results show that lecturer perFormance data are grouped into five clusters with different characteristics, including: lecturers with high and consistent perFormance, lecturers with high publication output, lecturers who are active in research but whose students' grades are relatively low, lecturers with low perFormance, and lecturers with stable perFormance. This clustering provides an objective overview of lecturer perFormance variations and can serve as a reference for the study program to design strategies for evaluation and continuous development of lecturer quality.

Keyword : *Lecturer PerFormance, Internal Data, Student Perception, X-Means, Clustering, PCA*