

ABSTRACT

This study aims to identify the trends in the use of non-cash payment systems and their relationship with financial inclusion within the academic community at Telkom University. With the advancement of digital technology, financial innovations have transformed how users interact with financial services through various electronic transaction tools such as mobile banking, digital wallets, and QR code-based payment methods. The study involved 100 students from all faculties at Telkom University. The analysis employed the DBSCAN (Density-Based Spatial Clustering of Applications with Noise) algorithm to group respondents based on their preferences in using digital payment systems. The results revealed three distinct preference clusters. The first cluster consists of students with high and active usage, primarily from the Faculty of Economics and Business, Electrical Engineering, and Industrial Engineering. The second cluster reflects moderate preferences, represented by students from the Applied Sciences, Creative Industries, and Communication and Business faculties. The third cluster, comprising students from the Faculty of Informatics, shows selective preferences and a more critical stance towards security and service efficiency. Evaluations using the Silhouette Score, Dunn Index, Calinski-Harabasz Index, and Davies-Bouldin Index indicate that an epsilon value of 1.0 provides the most optimal clustering structure. These findings are expected to serve as a foundation for developing more inclusive digital financial services tailored to the characteristics of users in higher education environments.

Keyword: cluster analysis, DBSCAN, digital payments, financial inclusion, user preferences