

ABSTRACT

This study addresses the issue of menu management at Warung Makan WARRAS, which has not yet been data-driven, resulting in less effective menu management and the unavailability of several menu items with high customer demand. To date, transaction data has only been archived without further analysis. Sales transaction data analysis plays a crucial role in revealing dynamic customer purchasing patterns. By identifying sales trends, the restaurant can improve operational efficiency and design menus based on actual demand. This research employs the *K-Means Time Series* method with *Dynamic Time Warping* (DTW) distance measurement and visualization using *Multidimensional Scaling* (MDS). The analysis process was conducted on 13 months of transaction data using MATLAB software. Validation of the clustering results, with a Silhouette coefficient value of 0.8716, indicates that the applied clustering method successfully produces a very strong and optimal cluster structure. The findings show that this method successfully grouped the menu into three clusters: high, medium, and low performance. Sales pattern-based clustering has been proven to minimize the risk of overstock by aligning inventory levels with demand trends. The information generated from this clustering provides a strategic foundation for more effective and efficient menu management.

Keywords: k-means, time series, DTW, clustering, transaction data