ABSTRACT

Small and medium-sized enterprises (SMEs) in the food and beverage (F&B) sector often struggle to stay competitive. Mbok Galak, for example, experienced declining sales due to the lack of a marketing strategy. This study aims to cluster menus and analyze their relationships using the K-Means and FP-Growth algorithms to support marketing recommendations. One year of sales data was analyzed using K-Means with Dynamic Time Warping (DTW) to measure sales pattern similarity, and Multidimensional Scaling (MDS) to transform the DTW distance matrix into a form suitable for clustering. The clustering process grouped menus into five clusters based on sales trends, levels, and menu characteristics such as type, average profit, average transaction, and fluctuation. Additionally, 641 customer transactions were analyzed using FP-Growth to identify frequent menu combinations. The analysis generated 16 association rules using a minimum support of 0.7, confidence of 0.9, and lift ratio ≥ 1. Data processing was conducted using MATLAB and RapidMiner. The findings were used to design marketing strategies such as bundling and targeted promotions to improve competitiveness. These results offer practical insights for SMEs like Mbok Galak in utilizing data-driven approaches to enhance business performance.

Keywords: marketing strategy, K-Means, FP-Growth, clustering, market basket analysis, restaurant