

ABSTRACT

The consumption of packaged food and beverages has become an integral part of modern lifestyles, yet the lack of understanding about the nutritional content in these products raises serious concerns for long-term health. Based on surveys conducted, 88% of respondents expressed concerns about the health impact of consuming packaged products, while 72.8% still experience difficulties in selecting products that meet their nutritional needs. The lack of nutritional literacy and inability to effectively utilize information on packaging labels is the main problem faced by the public in making healthy consumption decisions.

To address this problem, this research developed BeWise, a platform that recommends packaged food and beverage products based on nutritional content analysis using machine learning approaches. The application implements fuzzy logic to classify products into Nutri-Score categories (A-E) based on nutritional parameters such as energy, saturated fat, sugar, sodium, protein, and fiber. With barcode scanning features integrated with ML Kit, users can easily obtain instant product nutrition information and receive recommendations for healthier alternatives based on their preferences.

Testing results show that the developed machine learning model achieved 90% accuracy in classifying product Nutri-Scores, with stable API performance averaging 422.85 ms response time even under high load conditions. Usability testing using the System Usability Scale (SUS) yielded scores in the excellent category, indicating that the application was designed with user-friendliness in mind for various community groups. The implementation of the BeWise application is expected to help people make healthier decisions when choosing packaged food and beverage products, while also contributing to improved nutritional literacy to reduce the prevalence of diseases related to unhealthy dietary patterns.

Keywords: Application, Fuzzy Logic, Machine Learning, Nutrition, Nutri-Score