

APPLICATION OF NAÏVE BAYES ALGORITHM TO PREDICT CAKE AND BAKERY CUSTOMER LOSS

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ABSTRACT

This study applies the Naïve Bayes algorithm to predict customer churn in the cake and bakery business. Customer churn poses a significant challenge for businesses, potentially impacting their sustainability. The Naïve Bayes algorithm is utilized to analyze customer data based on attributes such as product variation, price, discount, flavor, promotion strategies, and service quality. This study aims to help business owners identify high-risk customers and design data-driven retention strategies. The research adopts the Rapid Application Development (RAD) method to design a web-based system. Data were collected through interviews and questionnaires, then processed through preprocessing stages, including cleaning, transformation, and splitting into training and testing datasets. The analysis results demonstrate that the Naïve Bayes algorithm provides accurate predictions with significant levels of accuracy 88%, precision 85%, and recall 86%. This model is expected to serve as an effective tool for businesses to enhance customer retention and reduce churn. Furthermore, the study contributes to the development of predictive analysis applications in other business sectors.

Keywords: Naïve Bayes, customer churn, cake and bakery, prediction, Rapid Application Development (RAD)