UNIVERSITI TEKNOLOGI MARA

SALES TREND ANALYSIS AND PREDICTION AT 989 KOPI COFFEE SHOP USING PREDICTIVE ANALYTICS

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ABSTRACT

The objective of the project was to analyze and forecast sales trends of 989 Kopi coffee shop through predictive analytics to resolve various issues, such as unstructured sales data, poor sales and item demand forecasting, and inability to provide an interactive dashboard to facilitate managerial decision-making. The key points of the research were to reveal the flaws of the current sales analysis cycle, use machine learning tools to predict sales and the demand of the item, and provide analytic findings, in an interactive visualization dashboard.The study used the CRISP-DM model that has six stages, which include business understanding, data understanding, data preparation, modelling, evaluation and deployment. RapidMiner was used to analyse 1,609 historical sales records. Three machine learning algorithms Decision Tree (DT), Random Forest (RF), and Extreme Gradient Boosting (XGBoost) were created and evaluated against each other to establish the best prediction model.The results of the experiment demonstrated that XGBoost has demonstrated the best performance in general. To predict overall sales, XGBoost model achieves an R^2 value of 95.40, Mean Absolute Error (MAE) of 297.786, and Root Mean Squared Error (RMSE) of 837.807. The results of the model at the item level were an R^2 of 95.40, MAE of 33.316, and RMSE of 79.937, which implies the model has high levels of accuracy in prediction and low levels of error. These findings indicate that the model was successful in the identification of sales trends and changes in demand.Results were used in better sales predicting and item demand estimation thus better control of inventory, resource planning, and business decision-making. Through interactive Power BI dashboard, the predictive outcomes and historical sales data were displayed enabling the management to track performance, predict future demand and identify high-performing products. All in all, the project improved the efficiency in forecasting and operations that allowed 989 Kopi to stay competitive in the volatile food and beverage business.