ABSTRACT

The digitalization of gas stations (SPBU) aims to enhance operational efficiency through the integration of devices such as dispensers, displays, nozzles, and EDC. The main issue is the suboptimal integration of digitalized devices into the system, leading to inaccurate data and inconsistent reporting. This study employs the Decision Tree method to predict the integration status of devices based on 534 operational data points from SPBU in the Telkom Makassar region with 45 attributes.

The data imbalance makes the model more accurate in detecting Partial Integration compared to Full Integration. The data was balanced using SMOTE before applying the Decision Tree model, which was evaluated using accuracy, precision, recall, and F1-score. Hyperparameter tuning was performed to improve performance.

The research results show that after the data was balanced using SMOTE, the Decision Tree model improved its ability to recognize the minority class. The final evaluation after applying SMOTE and hyperparameter tuning resulted in an accuracy of 69%, precision of 62%, recall of 89%, and an F1-score of 73%. These results indicate that the model can predict the integration status of devices more balancedly, supporting decision-making to enhance the SPBU digitalization system.

Keywords*: SPBU Digitalization, Decision Tree, Integration Status, SMOTE, Hyperparameter Tuning.*