ABSTRACT

Efficient ATM cash stock management is a challenge for the banking industry to ensure cash availability without excess or shortage which impacts customer satisfaction. This research proposes a Graph Attention Network (GAT) approach to improve the accuracy of ATM cash stock requirement prediction. This model analyzes the spatial and temporal relationship between ATMs using a graph representation, where each node represents an ATM and edges indicate transaction relationships between ATMs. The research process includes data exploration, preprocessing, graph transformation, model training using GAT, and performance evaluation using MAE, RMSE, and R-squared metrics. Test results show that the GAT model achieves 92.38% accuracy, with an F1-score of 91.83%, proving its effectiveness in predicting ATM cash stock requirements. This research contributes to the optimization of cash replenishment management by providing accurate predictions, reducing the risk of stock-outs, and improving the bank's operational efficiency.

Keywords: *ATM Forecasting, Graph Neural Network, Graph Attention Network, cash stock prediction*