

ABSTRAK

Peningkatan jumlah kunjungan pasien di RSUD Syarifah Ambami Rato Ebu Bangkalan menyebabkan antrean panjang pada layanan pendaftaran rawat jalan yang memicu fenomena *abandonment*, yaitu pasien meninggalkan antrean sebelum memperoleh pelayanan. Penelitian ini bertujuan mengidentifikasi faktor operasional dan perilaku yang memengaruhi probabilitas *abandonment* serta membangun model probabilitas menggunakan *Logistic Regression* (LR) dan *Gradient Boosted Trees* (GBT) pada sistem antrean *single queue*. Penelitian menggunakan pendekatan observasional kuantitatif terhadap 1.246 observasi pasien dengan variabel *headcount* depan, laju selesai pelayanan, proksi waktu tunggu (Proksi waktu tunggu), kategori hari, dan jam pelayanan. Hasil penelitian menunjukkan bahwa variabel laju selesai 5 menit dan jam pelayanan 11.00 berpengaruh signifikan terhadap probabilitas *abandonment*. Model LR setelah kalibrasi menjadi model terbaik dengan *accuracy* 75,10%, AUC 0,664, *LogLoss* 0,439, dan *Brier Score* 0,086, sedangkan GBT setelah kalibrasi memperoleh *accuracy* 82,33%, AUC 0,657, *LogLoss* 0,533, dan *Brier Score* 0,100. Meskipun GBT memiliki *accuracy* lebih tinggi, model LR kalibrasi dipilih sebagai model terbaik karena menghasilkan kualitas probabilitas yang lebih stabil dan mendekati kondisi aktual berdasarkan nilai AUC, *LogLoss*, dan *Brier Score*. Hasil tersebut menunjukkan bahwa kalibrasi probabilitas mampu meningkatkan kualitas probabilitas prediksi sehingga model lebih layak digunakan sebagai dasar pengambilan keputusan operasional rumah sakit.

Kata Kunci: *Abandonment* pasien, sistme antrean *single queue*, *logistic regression*, *gradient boosted trees*, kalibrasi probabilitas, proksi waktu tunggu, kesehatan dan kesejahteraan yang baik.

ABSTRACT

The increasing number of patient visits at Syarifah Ambami Rato Ebu Bangkalan Regional General Hospital has caused long queues at outpatient registration services, triggering the abandonment phenomenon, where patients leave the queue before receiving service. This study aims to identify operational and behavioral factors that influence the probability of abandonment and build a probability model using Logistic Regression (LR) and Gradient Boosted Trees (GBT) in a single queue system. The study used a quantitative observational approach to 1,246 patient observations with variables of front headcount, service completion rate, waiting time proxy, day category, and service hours. The results showed that the variables of 5-minute completion rate and 11:00 service hours significantly influenced the probability of abandonment. The LR model after calibration was the best model with an accuracy of 75.10%, an AUC of 0.664, a LogLoss of 0.439, and a Brier Score of 0.086, while the GBT model after calibration achieved an accuracy of 82.33%, an AUC of 0.657, a LogLoss of 0.533, and a Brier Score of 0.100. Although the GBT model had higher accuracy, the calibrated LR model was chosen as the best model because it produced more stable probability quality and was closer to actual conditions based on AUC, LogLoss, and Brier Score values. These results indicate that probability calibration can improve the quality of predicted probability, making the model more suitable for use as a basis for hospital operational decision-making.

Keywords: *Patient abandonment, single-queue queuing system, logistic regression, gradient boosted trees, probability calibration, waiting time proxy, Good Health and Well-being.*