

UNIVERSITI TEKNOLOGI MARA

**PREDICTIVE ANALYTICS FOR
PACEMAKER MEDICAL
INSTRUMENT STOCK
MANAGEMENT OF TRANSMEDIC
HEALTHCARE**

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ABSTRACT

The goal of this project is to improve the stock management procedure at Transmedic Healthcare Sdn. Bhd., a top distributor of cutting-edge medical equipment in Southeast Asia, by utilising business intelligence and predictive analytics. This study focuses on pacemaker inventory management regarding inefficiencies in forecasts, resultant overstocking, and stockouts due to highly manual data entry at the front end and limited ERP visualisation capabilities. The research applies the CRISP-DM methodology, examining current stock processes, and then collecting and cleansing historical data to develop Always Better Control (ABC) for stock analysis and predictive models using classification and also making a comparison between three algorithms, which are Naïve Bayes, Random Forest and Decision Tree. Power BI dashboards will be implemented to offer active insights into the stock level, demand forecast, and supplier performance in real-time, supporting decisions with data backing. The whole solution increases the accuracy of demand planning, operational efficiency, and customer satisfaction by reducing costs and errors in manual stock management. The results show that Naïve Bayes got outstanding interm overall scores, which are accuracy is 84.83%, recall is 82.60%, precision is 55.68% and F1-score is 66.54%. Thus, advanced analytics play a crucial role in forecasting stock levels by analyzing historical sales data, usage patterns, and demand trends. This predictive capability allows healthcare organizations to maintain optimal inventory levels, reduce the risk of overstocking or stockouts, and ensure the timely availability of critical medical supplies.

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