

UNIVERSITI TEKNOLOGI MARA

**PREDICTING YSPSAH'S PRODUCT
PREFERENCES ACROSS
DEPARTMENT OF PRIVATE
HOSPITALS**

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ABSTRACT

The advancement of data analytics has made sales data more accessible yet underutilised in healthcare procurement planning. Y.S.P. Southeast Asia Holding (YSPSAH), a pharmaceutical distributor, faces challenges in predicting product preferences across private hospital departments due to the absence of systematic predictive analysis. This leads to inconsistent stocking, inefficient procurement, and missed optimisation opportunities. This project aimed to develop a predictive model to forecast departmental product preferences and the addition is to identify the cross-selling product opportunities using Market Basket Analysis (MBA). Following the CRISP-DM methodology, historical sales data from 2023 to 2024 were collected and preprocessed. A Random Forest (RF) model was implemented for product prediction, achieving an accuracy of 88.59% with a 60:40 split, while FP-Growth was used with 3 diverse minimum support and confidence thresholds to uncover strong product associations for potential bundling strategies. An interactive Power BI dashboard was developed to visualise product predictions and MBA results, providing stakeholders with clear and actionable insights to support data-driven procurement decisions. Expert evaluation confirmed the dashboard's usability and practical relevance for operational planning. Limitations include the exclusion of external factors such as seasonality and reliance on historical data which may not reflect future trends. Future enhancements could involve integrating real-time data and testing advanced forecasting algorithms to improve model performance. Overall, this project demonstrates the potential of predictive modelling and MBA to transform historical sales data into strategic knowledge, optimising procurement planning and enhancing operational efficiency in the pharmaceutical industry.

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