UNIVERSITI TEKNOLOGI MARA

SALES ANALYSIS USING PREDICTIVE ANALYTICS: A CASE STUDY OF ANDARA HERITAGE SPA, KUALA TERENGGANU

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JULY 2025

Universiti Teknologi MARA

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ACKNOWLEDGEMENT

Alhamdulillah, praises and thank to Allah because of His Almigthy and His utmost blessings, I was able to finish this research within the time duration given. Firstly, my special thanks goes to my supervisor, Dr. NorulHidayah Binti Isa. Special appreciation also goes to my beloved parents Kamaruddin Bin Abu Bakar and Maryuni Binti Rukimin. Unforgetable all my family members and beloved people in my life because they never stop encourage me to be a better person everyday. Special thanks to them for their endless prayers, support and motivation which have been my strength throughout this journey. Last but not least, I would like to express my sincere gratitude to my dearest friends, especially those who provided help, feedback and moral support during the completion of this research.

ABSTRACT

In the increasingly competitive wellness industry, small and medium enterprises like Andara Heritage Spa in Kuala Terengganu often struggle to leverage their historical data for strategic planning, relying instead on manual records and subjective intuition. This research addresses this gap by implementing the CRISP-DM framework to develop a predictive analytics system that transforms raw Point-of-Sale (POS) data into actionable business intelligence. Through a comparative analysis of machine learning algorithms in RapidMiner, the Random Forest model was identified as the most accurate predictor, achieving a Root Mean Squared Error (RMSE) of 54.612, which outperformed both k-NN and Decision Tree models in handling the nuances of spa transaction data. These predictive results were then integrated into an interactive Power BI dashboard, providing management with a visual tool to monitor performance and anticipate future revenue trends. Validation through domain expert evaluation confirmed that the system is both practically useful and strategically relevant, enabling the spa to transition from reactive management to proactive, data-driven decision-making for long-term growth.