UNIVERSITI TEKNOLOGI MARA

PREDICTIVE ANALYTICS OF ZAKAT COLLECTION AND DISTRIBUTION FOR MAIDAM, TERENGGANU

NURUL SYAFIQAH BINTI MOHAMMAD ASRI

BACHELOR OF INFORMATION SYSTEMS (HONS.) BUSINESS COMPUTING

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ABSTRACT

This project focuses on implementing predictive analytics to analyse and predict zakat collection and distribution for Majlis Agama Islam dan Adat Melayu Terengganu (MAIDAM). The current analytical approach mainly provides historical and descriptive information, which limits MAIDAM's ability to estimate future zakat values and support proactive planning. Therefore, this project aimed to identify the current business process and related problems, implement predictive analytics for zakat collection and distribution, and visualise the prediction results through an interactive dashboard. The project followed the Cross-Industry Standard Process for Data Mining (CRISP-DM), which consists of six phases: business understanding, data understanding, data preparation, modelling, evaluation, and deployment. A total of 1,392 historical zakat records from 2019 to 2025 were prepared and analysed. Three regression models, namely Multiple Linear Regression, Gradient Boosted Trees, and Random Forest Regression, were implemented in RapidMiner using the prepared zakat collection and distribution datasets. The datasets were divided into training and testing sets to train the models and evaluate their performance on unseen data. Model performance was compared using Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), and Coefficient of Determination (R^2). The results showed that Multiple Linear Regression achieved the best performance for zakat collection prediction, with an RMSE of 702,158.225, an MAE of 416,382.387, and an R^2 value of 0.343. Meanwhile, Random Forest Regression achieved the best performance for zakat distribution prediction, with an RMSE of 891,708.849, an MAE of 450,085.325, and R^2 value of 0.953. The selected model results were implemented in an interactive Power BI dashboard to present historical trends and prediction outcomes. The dashboard can assist MAIDAM management, zakat officers, and analysts in monitoring zakat performance and supporting proactive, data-driven planning for zakat collection and distribution.