

Leveraging Machine Learning to Uncover Key Factors Influencing Satisfaction Among Free Tertiary Education Recipients in the Philippines

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Abstract— In spite of the broad implementation of the Universal Access to Quality Tertiary Education Act (UAQTE) – a groundbreaking legislation benefitting over 2 million students since its enactment in 2017 – a comprehensive evaluation of its outcomes has been notably absent. To bridge this gap, an extensive survey was undertaken among graduating tertiary students in selected regions of the Philippines. This strategically designed survey aimed to pinpoint overlooked aspects of UAQTE and capture firsthand insights from its recipients. The methodology employed to create this survey included focus-group discussions with various stakeholders (i.e., students, parents, faculty) and a pilot test reflecting the target demographic. To facilitate analysis of the results of 1462 responses, five regression machine learning algorithms were then employed to analyze questionnaire data. The decision tree regressor with a root-mean-squared-error of 0.6881 was found to be the best performing model describing the collected questionnaire data. Shapley explanations of the best performing model highlighted the desire of the recipient to pursue international employment as the top predictor of satisfaction in UAQTE among its recipients. Furthermore, insights from employed topic modeling among the open-ended questions in the deployed survey suggested potential inadequacy of UAQTE subsidies, specifically to recipients whose pursued degrees are in the science, technology, engineering, and mathematics courses. This substantial finding promises valuable insights into the effectiveness of the legislation and may inform future policy adjustments to better address the diverse needs of tertiary education in the Philippines. Overall, this research provides a robust framework for assessing the impact of UAQTE and showcases a methodologically sound approach in integrating machine learning and qualitative analysis.

Keyword— Machine Learning, Tertiary Education, Satisfaction, Free Education



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