

Transforming Education Policy: Evaluating UAQTE Program Implementation through LDA, BoW and TF-IDF Techniques

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Abstract— This research aimed to deepen our understanding of the issues and challenges faced by beneficiaries of the Philippines' Universal Access to Quality Tertiary Education (UAQTE) program by utilizing Latent Dirichlet Allocation (LDA) complemented by Bag of Words (BoW) and Term Frequency-Inverse Document Frequency (TF-IDF) techniques. The study used the "Boses Ko" participatory toolkit, a digital portal to collect student responses from the various Higher Education Institutions (HEIs). The analysis showcased the LDA model's proficiency in identifying distinct clusters, underscoring its ability to generate coherent and meaningful topics that provide interpretable and insightful dataset representations. Evaluation of the models included Silhouette and Coherence Scores, supplemented by manual assessments by domain experts. This comprehensive approach led to the identification of key themes, including "Academic Difficulties," "Financial Difficulties," "Pandemic-Related Challenges," "Grant Disbursement," and "Program Implementation." The identified themes present actionable policy recommendations geared towards strengthening academic support, financial assistance, flexible grant disbursement, addressing pandemic-related challenges, and establishing a structured feedback mechanism. These measures collectively aim to enhance the overall implementation of the UAQTE program.

Keywords— Topic Modeling, Latent Dirichlet Allocation (LDA), Bag-of-Words, TF-IDF, UAQTE program



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