Decision Support System for Selecting KIP-K Scholarship Recipients at Jember State Polytechnic Using the PROMETHEE Method

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ABSTRACT

The Kartu Indonesia Pintar Kuliah (KIP-K) educational assistance program is intended for college students with financial constraints. However, the Jember State Polytechnic still faces challenges in determining fair and accurate recipient priorities due to the high volume of applicants and the diverse assessment criteria. To address these challenges, this study designed a web-based Decision Support System (DSS) to optimize the KIP-K selection process. The system was built using the Laravel framework and integrates six main criteria: high school-level KIP status, DTKS status, economic decile, total parental income, parental status, and academic achievement. To determine the best candidates, the PROMETHEE method was applied to rank applicant alternatives. This method works by calculating preference indices, leaving flow, entering flow, and net flow, thereby generating a list of recommendations based on the highest accumulated scores. The software's performance was evaluated using a Confusion Matrix by comparing the system's recommendation output with actual recipient data from 2024. Based on this evaluation, the system achieved an accuracy rate of 83.68%, as well as precision, recall, and an F1-score, each reaching 81.24%. These evaluation results confirm the system's suitability for operation, given its ability to provide scholarship recipient recommendations that are more structured, objective, and highly aligned with actual data.

Keywords : *Decision Support System, KIP-K Scholarship, PROMETHEE, Confusion Matrix*