

RANKING ZAKAT RECIPIENTS AT ZAWAF UITM PERLIS USING FUZZY TOPSIS

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Abstract

In today's challenging economic climate, the demand for financial assistance such as zakat has significantly increased. Yet, many eligible individuals remain unaware of the aid available to them or are overlooked due to unclear or inconsistent selection processes. Recognizing this gap, this study proposes a systematic approach to enhance zakat distribution by objectively ranking recipients. The fair and efficient distribution of zakat plays a crucial role in addressing poverty and financial inequality. However, the process of selecting eligible zakat recipients often relies on subjective judgment, which can result in bias and inconsistency. To overcome this, the Fuzzy TOPSIS method was applied to evaluate and rank zakat recipients at ZAWAF UiTM Perlis based on three criteria such as income level, sponsorship, and the number of dependents in the family. A total of 22 recipients were assessed using fuzzy linguistic scales to measure both the importance of each criterion and the performance of each recipient. The findings revealed that income level was the most influential factor with a closeness coefficient (CC) value of 0.55784 indicating the strongest. These results show that the Fuzzy TOPSIS method is useful in making the zakat distribution process fair and transparent. It helps reduce bias and personal judgment by using clear data to make decisions. This study helps improve how zakat is given to those who really need it and can be used as a guide by zakat institutions and policymakers to create a more organized, fair, and trustworthy system for giving financial aid.

Keywords: *TOPSIS, MCDM, Zakat, Ranking, ZAWAF*

1. Introduction

Zakat distribution plays a vital role in supporting financially vulnerable individuals, particularly students facing economic hardship. However, inconsistent selection methods may hinder fair and transparent allocation. This study aims to address this issue by applying the Fuzzy TOPSIS to objectively rank zakat recipients at ZAWAF UiTM Perlis using Fuzzy TOPSIS. The primary objective is to develop a structured approach to ranking recipients, while the sub-objective is to identify key factors influencing zakat eligibility, such as income level, number of dependents in the family, and sponsorship status. The criteria were selected and adapted from the study by Abdul Aziz et al. (2023), which explored key factors affecting students' eligibility for zakat assistance. This study utilizes secondary data provided by ZAWAF and focuses specifically on students of UiTM Perlis. Findings from this research are context-specific and may not be directly applicable to other regions due to differences in socio-economic conditions and zakat distribution practices across Malaysia. Nonetheless, the study offers a practical framework for enhancing fairness in zakat allocation.

2. Methodology

This study employs the Fuzzy TOPSIS to systematically evaluate and rank zakat recipients at UiTM Perlis. The analysis is based on secondary data obtained from ZAWAF, the university's zakat management unit, involving 22 student recipients as alternatives. Three key socio-economic criteria were used in the evaluation process: income level, number of dependents in the family, and sponsorship status. These criteria were selected due to their significant relevance in determining financial need. Unlike conventional approaches that rely on direct expert input, this study involved the researcher interpreting the available data and assigning appropriate linguistic terms to reflect each

recipient's condition. These linguistic assessments were then converted into triangular fuzzy numbers to facilitate structured analysis. The mathematics concept borrowed from (Sun & Lin, 2009), the Fuzzy TOPSIS procedure includes several computational steps: constructing a fuzzy decision matrix, normalizing the fuzzy values, applying weights to each criterion, and determining both the fuzzy positive ideal solution (FPIS) and the fuzzy negative ideal solution (FNIS). Finally, the closeness coefficient (CC) for each alternative was calculated to determine the final ranking of recipients. This method reduces subjectivity and provides a more transparent, consistent, and data-driven approach to zakat recipient selection, ultimately supporting a fairer distribution process based on measurable socio-economic factors.

3. Results / Findings

The application of the Fuzzy TOPSIS method successfully ranked 22 zakat recipients at UiTM Perlis based on key socio-economic criteria. The results highlighted the most eligible recipient with a highest closeness coefficient (CC) value of 0.55784, indicating strong alignment with the ideal financial need profile. Recipients were evaluated using three core criteria: income level, number of dependents in the family, and sponsorship status. Among these, income level emerged as the most influential factor in the ranking process, followed by the number of dependents and sponsorship. By converting the raw data into fuzzy linguistic scales and applying structured computations, the method provided a clear and consistent ranking of recipients. The findings demonstrate that Fuzzy TOPSIS is effective in supporting fairer and more objective zakat distribution, reducing reliance on subjective decision-making. This structured approach not only improves transparency and accountability but also offers practical value to institutions like ZAWAF in enhancing the efficiency and credibility of their aid allocation process.

4. Novelty of Research

This study introduces a novel application of the Fuzzy TOPSIS method to the context of zakat distribution, specifically targeting student recipients at UiTM Perlis. While traditional zakat allocation processes often rely on manual judgment and subjective interpretation, this research offers a structured, data-driven approach to ranking recipients based on multiple socio-economic criteria. By assigning linguistic terms to reflect financial need and converting them into triangular fuzzy numbers, the study enhances both accuracy and fairness in the selection process. Unlike existing methods, this approach minimizes bias, promotes consistency, and provides a replicable model that can be adapted by other institutions managing zakat or similar welfare funds. The use of secondary data, combined with a well-defined computational framework, adds further credibility and practicality to the proposed system. This research not only contributes to academic knowledge in multi-criteria decision-making (MCDM) but also offers a meaningful solution for improving the transparency, efficiency, and trustworthiness of financial aid distribution within educational institutions.

5. Conclusion

This study confirms the effectiveness of Fuzzy TOPSIS in ranking zakat recipients fairly and objectively. Future work should expand criteria, include more expert input, and explore broader applications across regions. Implementing this method can improve transparency, consistency, and impact in zakat distribution for long-term community support.

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