UNIVERSITI TEKNOLOGI MARA

EVALUATING VIDEO CONFERENCING E-LEARNING PLATFORMS IN HIGHER EDUCATION USING FUZZY ANALYTICAL HIERARCHY PROCESS AND FUZZY TECHNIQUES FOR ORDER OF PREFERENCE BY SIMILARITY TO IDEAL SOLUTIONS

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ABSTRACT

The rapid advancement of digital technology has led to the widespread use of video conferencing e-learning platforms in higher education. However, evaluating and selecting the most effective platform remains a complex challenge due to the involvement of multiple criteria. This research aims to evaluate video conferencing e-learning platforms in higher education by applying a hybrid multi-criteria decision-making (MCDM) approach, specifically the Fuzzy Analytical Hierarchy Process (AHP) and the Fuzzy Techniques for Order of Preference by Similarity to Ideal Solutions (TOPSIS) to assess various e-learning alternatives. The evaluation criteria are determined based on a interview session with experts and a literature review, considering key factors such as usability, user satisfaction, and system reliability. The Fuzzy AHP method is used to calculate the weight of each criterion, while the Fuzzy TOPSIS method is used to rank the alternatives according to their proximity to the ideal solution. The findings show that the criteria of Usability with the weight value of 0.49576 was ranked first, followed by Security, Interface and Function. According to the findings, Google Meet is ranked as the top alternatives followed by Microsoft Teams, Webex and Zoom. The results yield a structured and comprehensive framework that improves platform selection strategies in higher education, offering a practical contribution to the advancement of digital learning environments.

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