

A SYSTEMATIC ANALYZING AND RANKING OF FACTORS INFLUENCING TEACHERS' EARLY RETIREMENT INTENTIONS USING FUZZY DELPHI METHOD

Muhammad Naim Hazami bin Isrofaizal, Mohd Halimi Ab Hamid

Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Perlis Branch, Malaysia

e-mail: naiymfazny03@gmail.com, halimi@uitm.edu.my

Abstract

Education is key to Malaysia's nation-building, with the Ministry of Education stressing strong leadership as per the Malaysian Education Development Plan 2013-2025. However, early retirement among school leaders highlights the need for better financial literacy and retirement planning to address issues and push policy changes. This study uses the Fuzzy Delphi Method to rank factors affecting early retirement intentions among 25 teachers aged 35-55 with at least 10 years of experience at SMK Parit Panjang, aiming to improve teacher retention and educational stability. It examines job stress, health issues, financial factors, demographic factors, and workload challenges with a standardized questionnaire. Data were turned into triangular fuzzy numbers (TFN) and analyzed using defuzzification and threshold techniques. Results, with defuzzified values from 0.483 to 0.656 and consensus levels of 80-100%, showed health concerns, job stress, financial factors, and workload as key factors, while demographic factors (0.448, 68% consensus) were dropped below the 75% threshold. Health issues ranked highest, followed by job stress, financial factors, and workload challenges. This study offers a framework for policymakers to create solutions for a sustainable education system.

Keywords: *Delphi, Early Retirement Intentions, Teachers.*

1. Introduction

The Fuzzy Delphi method will be used to identify and rank key variables driving early teacher retirement, enabling stakeholders to design targeted interventions and policies to enhance teacher retention and educational quality (Ishikawa, 1993). This study aims to rank factors influencing early retirement intentions among teachers at SMK Parit Panjang, Kuala Ketil, Kedah, using the Fuzzy Delphi method, focusing on 25 teachers that eligible for early retirement. The specific objective is to analyze expert consensus on factors, ranking their relative importance to enhance understanding of the dynamic decision-making process. Qualitative data from instructors will be converted into fuzzy sets, evaluated with the Fuzzy Delphi method to reduce ambiguity in human judgment. However, limitations include the small sample size, subjective biases, lack of detailed exploration into family dynamics, and potential obsolescence due to policy, economic or social changes, restricting generalizability to other schools or regions.

2. Methodology

The study employed the Fuzzy Delphi Method to systematically analyze and rank factors influencing early retirement intentions among teachers at SMK Parit Panjang, Kuala Ketil, Kedah. Data collection involved a structured questionnaire distributed via Google Forms, divided into four sections which are demographic information, initial perceptions, factor evaluation, and ranking. The questionnaire assessed five factors using a five-point Likert scale which are Strongly Agree to Strongly Disagree, later converted into TFN for analysis. The process began with expert selection, ensuring diversity in teaching roles and experience. Next, data were collected and transformed into fuzzy sets, with linguistic responses mapped to numerical values. Next, threshold values were calculated using the formula $d = |\text{expert fuzzy number} - \text{average fuzzy number}|$, with $d \leq 0.2$ indicating consensus. Defuzzification followed, with $A_{\max} = [m1 + m2 + m3]/3$ to rank factors, accepting those with a

fuzzy score ≥ 0.5 and $\geq 75\%$ consensus. This rigorous methodology ensured reliable prioritization of factors, providing actionable insights for educational policymakers.

3. Results / Findings

The study analyzed data from 25 teachers at SMK Parit Panjang using the Fuzzy Delphi Method to rank factors influencing early retirement intentions. Results showed health issues as the top factor with defuzzified value 0.656 and 88% consensus, followed by job stress with defuzzified value 0.600 and 100% consensus, financial considerations and workload challenge with defuzzified value 0.488 and 0.483, and also 84% and 80% consensus respectively. Demographic factors with defuzzified value 0.448 and 68% consensus, below 75% threshold were rejected (Jusoh, 2021). These findings highlight health and stress as critical drivers, aligning with prior research, and suggest targeted interventions like wellness programs and workload reduction to enhance teacher retention.

4. Novelty of Research

This project offers a novel contribution to the study of early retirement among secondary school teachers by applying the Fuzzy Delphi Method in the specific context of SMK Parit Panjang, a rural school in Kuala Ketil, Kedah, Malaysia. The integration of fuzzy logic to handle expert opinions addresses the ambiguity in retirement decision-making, a methodological innovation over traditional Delphi approaches. By ranking factors while excluding demographic factors due to insufficient consensus, this research uncovers context-specific priorities not fully explored in existing literature. The use of TFN and defuzzification enhances the precision of factor prioritization, offering a robust framework for policy development.

5. Conclusion or Future Work

This study concludes that health issues and job stress are primary drivers of early retirement among SMK Parit Panjang teachers, with financial and workload factors also significant. Generalizability would be enhanced by expanding the sample size to include more schools and geographical areas.

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