UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

A COMPARATIVE STUDY BETWEEN EXTENT ANALYSIS METHOD AND GEOMETRIC MEAN METHOD IN FUZZY ANALYTIC HIERARCHY PROCESS (FAHP): A CASE STUDY OF SELECTION OF BEST STUDENT IN A SECONDARY SCHOOL

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

Multi-criteria decision making (MCDM) is a process of weighting and selecting the best alternative based on a set of criteria. Selection of best student in a secondary school is one of the multi-criteria decision making (MCDM) problem that occur in the education field. The objective of this study are to apply the extent analysis method and geometric mean method in FAHP to solve multi-criteria decision making (MCDM) problem, to compare two different methods of FAHP which are the geometric mean method and extent analysis method and to select the best method between extent analysis method and the geometric mean method in FAHP. There alternatives for this MCDM problem are five students and there are four criteria involved which are academic, co-curriculum, personality and attendance. Both alternatives and criteria were gathered from the expert which is the teacher of the respective secondary school and ten teachers who know enough the five students were chosen as the respondents. The result from this study shows that both extent analysis and geometric mean method in FAHP produced a different weight of criteria and alternative but for the best student selection, both methods showed that student 1 is the best student. Sensitivity analysis was conducted by shifting the value of each criterion to zero to find out whether there is a significant influence in the ranking of alternatives. The conclusions for this study are student 1 is the best student in a secondary school, both methods have been compared in terms of the weight priorities and ranking of each criterion and alternative and last but not least, geometric mean method is the best method for this study compared to the extent analysis method in FAHP because it produced a small error and least time consuming when computing the method.