UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

COMPARATIVE ANALYSIS OF DEA/AHP AND DEA/FUZZY AHP MODELS IN EVALUATING THE EFFECIENCY OF LIFE INSURANCE AND TAKAFUL COMPANIES

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ABSTRACT

The purpose of this research is to evaluate efficiency of life insurance and Takaful companies in Malaysia by comparing the efficiency result based on integrating of Data Envelopment Analysis (DEA) with Analytic Hierarchy Process (AHP) and Data Envelopment Analysis (DEA) with Fuzzy Analytic Hierarchy Process (FAHP) during the period 2015-2017. The output-input data consist of 19 life insurance and Takaful companies in Malaysia were chosen as the sample of the study. This research develops the output orientation CCR model to measure the efficiency. This study utilizes two inputs and two outputs; commission expenses and management expenses as well as net premium and net investment income. The secondary data has been collected from each company's annual financial report respectively. This paper has compared the three models which are DEA, DEA/Fuzzy AHP and DEA/AHP. The result showed that DEA model produces many efficient units and many zero weights for three consecutive years. Then, by integrating Fuzzy AHP and AHP into DEA the number of efficient units has been reduced. Besides that, by using the DEA/Fuzzy AHP model the number of zero weights has been reduced. While by using DEA/AHP model, the number of zero weights has been eliminated. It shows that the discrimination power has been increased when expert judgement being considered.