

**UNIVERSITI TEKNOLOGI MARA**

**PRIORITIZATION OF HUMAN  
CAPITAL MEASUREMENT  
INDICATORS USING INTEGRATION  
OF FUZZY SOFT MATRIX AND  
FUZZY AHP**

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Thesis submitted in fulfillment  
of the requirements for the degree of  
**Master of Science**

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## **AUTHOR'S DECLARATION**

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree of qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## ABSTRACT

Human capital is considered as a significant sub – dimension of the intellectual capital. There are many indicators that can be used to measure the importance of human capital such as work output, knowledge and skill and personal quality. For ensuring the effectiveness in an organization, the measurement indicators for human capital must be prioritized and defined. Normally in prioritizing the measurement indicators, it involves data that are imprecise or subjective in nature. The concept of fuzzy soft set basically is a generalization of the basic concept of soft set theory. It is a combination between soft sets and fuzzy sets, where the fuzzy values are used in soft set theory. However, the existing decision making methods related to fuzzy soft set theory only consider either single or two decision makers in solving decision making problems and there is no systematic method for determining the weights of criteria is given in fuzzy soft sets. The weights of criteria are basically determined by decision makers without any proper procedure. Determination of criteria weight is not considered in the decision making process based on the concept fuzzy soft matrices. The Lambda – max method which frequently utilized in the fuzzy analytic hierarchy process (Fuzzy AHP), has been applied to determine criteria weight. Fuzzy soft matrices are used in determining the score of each indicator in sub – criteria and AHP are applied to prioritize the measurement indicators of human capital in hierarchical structure. In this research, the matrix concept is applied in fuzzy soft sets. The complex problem will divided into the same factors and presented in each level of hierarchy. The fuzzy soft max – min decision making (FSMmDM) method will be generalized to  $n$  number of decision makers where  $n > 2$ . The group decision making problems incorporating together with the weight of the criteria will be solved by using the proposed method. The human capital measurement indicators for academicians in the research study will be prioritized by using the proposed procedure.

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