## A revised procedure to identify $\lambda$ <sup>0</sup>-measure values for applying Choquet integral in solving multi-attribute decision problems

## ABSTRACT

Choquet integral is currently being employed in many multi-attribute decision problems thanks to its ability in capturing the interactions that usually exist between the evaluation attributes during the aggregation process. However, the process of identifying 2n values of fuzzy measure prior to applying Choquet integral normally turns into a complex one especially when the decision problem involves large number of evaluation attributes, n. Many patterns of fuzzy measure have been introduced to deal with this complexity and  $\lambda^{0}$ -measure is one such pattern. Unfortunately, the existing  $\lambda^{0}$ -measure identification procedure failed to provide clear indications as to which attributes need to be enhanced in order to significantly inflate the performance of alternatives. That being the case, this paper proposed a revised version of the original  $\lambda^{0}$ -measure identification procedure through the integration of decision making trial and evaluation laboratory (DEMATEL) model. The revised procedure uses DEMATEL to identify the causal-effect relations between the attributes. The outputs of DEMATEL (i.e. digraph and importance ratios) are then utilized to determine the inputs required to identify the complete set of  $\lambda^{0}$ -measure values. A vendor evaluation problem was used to demonstrate the feasibility of the procedure. The differences between the revised and original procedure were discussed as well.