A short survey on the usage of choquet integral and its associated fuzzy measure in multiple attribute analysis

Abstract

Choquet integral operator is currently making inroads into many real multiple attribute analysis due to its ability on modeling the usual interactions held by the attributes during the aggregation process. Unfortunately, the process of identifying 2^n values of fuzzy measure prior to employing Choquet integral normally turns into a very complex one with the increasing number of attributes, n. On that note, this paper mainly reviews on some of the methods that have been proposed in reducing the complexity of identifying fuzzy measure values together with their pros and cons. The paper begins with a discussion on the aggregation process in multiple attribute analysis which then focuses on the usage of Choquet integral and its associated fuzzy measure before investigating some of the fuzzy measure identification methods. A simple numerical example to demonstrate the merit of using Choquet integral and the indications for future research are provided as well. The paper to some extent would be helpful in stimulating new ideas for developing simpler or enhanced versions of fuzzy measure identification methods.