Choquet integral aggregation extensions under q-rung Orthopair fuzzy set environment. Application in MCDM

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In this seminar is discussed data aggregation in different fuzzy environments and their application in multi criteria (multi attribute) decision making (MCDM) systems. The speech is about Zadeh fuzzy set theory, which was introduced in 1965 and lately evolved first into an intuitionistic fuzzy set, then into pythagorean and q-rung orthopair fuzzy set.

There are different aggregation operators based on mentioned fuzzy sets, which are actively used in MCDM decision making matrix aggregation, mainly in fuzzy numbers' averaging for further alternatives ranking. Classic operators are weighted averaging aggregation operators (IFWA, PFWA, q-ROFWA and etc.).

Such operators lack of criteria interaction consideration. In fuzzy MCDM evaluations are made by experts. It is obvious, that for correlative criterias must be used an appropriate aggregation tool, which can consider these phenomena. Today one of the most popular operators for such usage is Choquet finite integral.

Using Choquet finite integral and fuzzy measure, we can consider the correlative phenomena to gather more reliable and trusted results from aggregations. In this work are discussed fuzzy Choquet averaging operators and their few extensions. Famous authors who described Choquet integral's extentions are mentioned in this work's bibliography.

One of the extensions uses fuzzy measure with associated probability class, which represents one of my future research's important task.