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A consensus process for group decision making with probabilistic linguistic preference relations

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Abstract

In group decision making (GDM) process, consensus is a fundamental problem. The information provided by the experts in a GDM problem is usually expressed as preferences, and the linguistic preference relation (LPR) is one of the most frequently used structures to model the experts' preferences. As a new type of LPR, the probabilistic linguistic preference relation (PLPR) not only allows the experts to provide more than one linguistic term about linguistic variables, but also reflects different importance degrees of the possible preference values. This paper focuses on the consensus reaching process for GDM with PLPRs. An index for measuring the consensus degree is defined first. Then, as for the expert group with unacceptable consensus degree, a consensus improving method is introduced based on the consistency and consensus criteria. Moreover, the whole GDM process is introduced based on the aggregation operators for the probabilistic linguistic term sets (PLTSs). Finally, an application case about medical information FI

Keywords: Group decision making; probabilistic linguistic term set; consensus; probabilistic linguistic preference relations; aggregation operators.

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