A RELIABILITY BASED CONSISTENT FUZZY PREFERENCE RELATIONS - FUZZY SIMILARITY FOR RISK ASSESSMENT IN OIL AND GAS INDUSTRY

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Abstract:
In decision making, linguistic variables tend to be complex to handle but they make more sense than classical fuzzy numbers. Fuzziness is not sufficient enough to deal with information and degree of reliability of information is critical. Znumbers is proposed to model the uncertainty produced by human judgment when eliciting information. Therefore, the implementation of z-numbers is taken into consideration, where it has more authority to describe the knowledge of human being and extensively used in the uncertain information development. This issue has motivated the authors to propose fuzzy multi criteria group decision making methodology using z-numbers. The proposed methodology is demonstrated the capability to handle knowledge of human being and uncertain information for risk assessment in oil and gas industry. This assessment is due to periodic basis, which will give insights from the operational until the strategic level of decision making process that is capable of dealing with uncertainty in human judgment. The consistent fuzzy preference relations is developed to calculate the preference-weights of the criteria related based on the derived network structure. The fuzzy similarity measure method is applied to resolve conflicts arising from differences in information and opinions provided by the decision makers. The proposed methodology is constructed without losing the generality of the consistent fuzzy preference relations and fuzzy similarity under fuzzy environment.

Keywords : Consistent Fuzzy Preference Relations; Fuzzy Similarity; Multi Criteria Decision Making; Z-Numbers, Reliability; Oil And Gas Industry

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