Grey Relational Analysis based Intuitionistic Fuzzy Multi-Criteria Group Decision-Making Approach for Teacher Selection in Higher Education

Abstract

Teacher selection is a group decision-making process under multiple criteria involving subjectivity, imprecision, and vagueness, which are best represented by intuitionistic fuzzy sets. An intuitionistic fuzzy set, which is characterized by membership function (degree of acceptance), non-membership function (degree of rejection) and the degree of indeterminacy or
the degree of hesitancy, is a more general and suitable way to deal with imprecise information, when compared to a fuzzy set. The purpose of this study is to develop an intuitionistic fuzzy multi criteria group making method with grey relational analysis for teacher selection in higher education. Intuitionistic fuzzy weighted averaging operator is used to aggregate individual opinions of decision makers into a group opinion. Eight criteria obtained from expert opinions are considered for selection process. The criteria are namely academic performances, teaching aptitude, research experience, leadership quality, personality, management capacity, and values. Weights of the criteria are obtained by using a questionnaire. The weights of decision makers are considered as equal i.e. their importance are equal. The rating of an alternative with respect to certain criteria offered by decision maker is represented by linguistic variable that can be expressed by intuitionistic fuzzy sets. Grey relational analysis is used for ranking and selection of alternatives to constitute a panel of selected candidates. An educational problem for teacher selection is provided to illustrate the effectiveness of the proposed model.

Reference

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**Index Terms**

Computer Science

Fuzzy Systems
Key words
Intuitionistic Fuzzy sets
Multi Criteria Group Decision-Making
Grey System Theory
Grey Relational Analysis
Grey Relational Coefficient