

SUMMARY AND CONCLUSION

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Decision making problem is the process of finding the best option from all of the feasible alternatives. In almost all such problems the multiplicity of criteria for judging the alternatives is pervasive. That is, for many such problems, the decision maker wants to solve a multiple criteria decision making (MCDM) problem.

One of the most popular methods in MCDM is the Technique for Order Preference by Similarity or TOPSIS.

Many real-life decision problems are confronted with unquantifiable, incomplete and non-obtainable information that make precise judgment impossible. This is when fuzzy TOPSIS comes into play where the criteria weights and alternative ratings are given by linguistic variables, expressed by fuzzy numbers.

There are different Fuzzy TOPSIS methods available in the literature.

In this thesis, Fuzzy TOPSIS Method, Modified Fuzzy TOPSIS Method, Integrated Fuzzy TOPSIS Method, Intuitionistic Fuzzy TOPSIS Method, Interval-Valued Fuzzy TOPSIS Method, Fuzzy Flexible TOPSIS Method are studied with some of its applications to real world problems.

The first chapter deals with preliminary definitions and notations.

In the second chapter the following fuzzy TOPSIS methods are studied

- i. Fuzzy TOPSIS Method using Triangular Fuzzy Numbers
- ii. Fuzzy TOPSIS Method using Triangular Fuzzy Numbers with Graded Mean Integration Representation
- iii. Fuzzy TOPSIS Method using Trapezoidal Fuzzy Numbers
- iv. Fuzzy TOPSIS Method based on alpha-level sets.

Modified Fuzzy TOPSIS method includes modifications in Fuzzy Multiple Criteria Decision-Making theory to strengthen the comprehensiveness and

reasonableness of the decision making process using Fuzzy TOPSIS. This method is studied in chapter III.

In chapter IV Integrated Fuzzy TOPSIS Method is studied by employing the graded mean integration representation method and the modified distance method.

Intuitionistic Fuzzy TOPSIS Method and Interval-Valued Fuzzy TOPSIS Method are studied in detail in chapters V and VI respectively.

In chapter VII Fuzzy Flexible TOPSIS which is proposed with the objective of improving the Fuzzy TOPSIS ability to deal with uncertainty through the combination of the mathematical process involved in the original Fuzzy TOPSIS with the expert empirical knowledge is studied in detail.

Application of all these Fuzzy TOPSIS methods in real-life problems facilitates in deriving scientific and logical solutions.

In chapter VIII the author of this thesis made an attempt to develop a decision making model for choosing a suitable mode of transport by using Intuitionistic Fuzzy TOPSIS method.

The present competitive world warrants mathematical and logical models to find solutions to various issues. The ever increasing complexities of issues cause a great concern to the decision makers in all the fields of administration and management. Application of mathematical techniques like Fuzzy TOPSIS Methods in real life problems not only helps the administrators to find a right solution but also the beneficiaries to gain maximum advantage/ satisfaction.