

Final Presentation On A Comparative Study Of AHP And Fuzzy AHP Method For Inconsistent Data

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OUTLINES

- Main Summary of the Assigned Paper Include Result
- Proposed Methodology Explanation
- Advantage
- Disadvantage
- Every Terminology of the paper Used
- Experimental Result section Explanation
- Result & Conclusion of the Paper

Main summary of the assigned paper

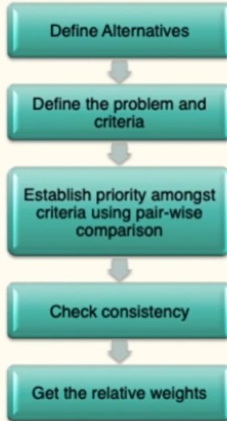
Analytic Hierarchy Process:

Analytical Hierarchy Process (AHP) is a mathematical tool of problem solving that has become popular amongst management personnel in the late 1990's and early 2000's. The AHP method has been created after understanding the structure of a problem and the real hindrance that managers face while solving it.

- The Logic behind AHP
- Drawbacks of AHP

Proposed Methodology Explanation

Steps in AHP



1	Equal Importance
3	Moderate Importance
5	Strong Importance
7	Very strong Importance
9	Extreme Importance
2,4,6,8	Intermediate Values

Proposed Methodology Explanation Cont...

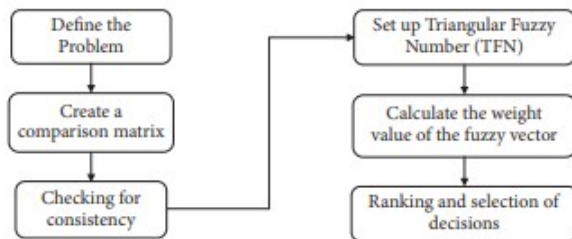


FIGURE 1: Block diagram has six steps of F-AHP phase process.

By using F-AHP method we can help a decision-maker to make more efficient, flexible, and realistic decisions based upon the available criteria and alternatives. Therefore, the authors wish to apply the F-AHP method to determine the quality of gemstones.

Advantage and Disadvantage

Advantages:

- AHP can take into consideration the relative priorities of factors or alternatives and represents the best alternative.
- AHP provides a simple and very flexible model for a given problem.
- AHP provides an easy applicable decision making methodology that assist the decision maker to precisely decide the judgments.
- Either objective or subjective considerations or either quantitative or qualitative information play an important role during the decision process.

Advantage and Disadvantage

Disadvantages:

- There is not always a solution to the linear equations.
- The computational requirement is tremendous even for a small problem.
- AHP allows only triangular fuzzy numbers to be used.
- AHP is based on both probability and possibility measures.

Every terminology of the paper used

Multi-level hierarchical structure of objective (goal), decision criteria and alternatives (courses of actions).

Pair-wise comparisons are used to determine the weights and rankings of criteria and alternatives.

Steps:

- Step 1: Build the AHP hierarchy
- Step 2: Construct pair-wise comparison matrices (on the basis of data collected from experts)
- Step 3: Calculate weights (priorities) of criteria (and sub-criteria if any)
- Step 4: Consistency check
- Step 5: Calculate weights (priorities) of alternatives

Experimental Result section explanation

The authors used AHP method and Fuzzy AHP method, which is also known as Fuzzy MPDM (Multi-person decision making) or more specifically MPPC (Multi-person preference criteria), to reach a conclusion and a result.

Respected authors observed the results of AHP and Fuzzy MCDM comparison on a table. Table content stated as follows-

- 1. Increase or decrease in AHP makes an increase or decrease in Fuzzy respectively 50%.
- 2. Increase or decrease in AHP makes reverse swing in Fuzzy 32.36%.
- 3. Either AHP or Fuzzy remain unchanged for any slope of Fuzzy or AHP Respectively 17.64%.

Result & Conclusion of the Paper

- Their analysis of the results tells us Fuzzy Curve and AHP curve have similarities in nature. For most of the cases of this study, an increase or decrease in Fuzzy data creates a successive increase and decrease in AHP data. It can also be seen that the vibration of both curves is the same for most of the samples.
- When the fuzzy data is increased, we see that the AHP data is successively increased and decreased for the fuzzy decrease and the vibration of both curves is the same for many samples in most cases except a few.

Thank
You

