3.3 ANALYTIC HIERARCHY PROCESS (AHP):

Developing a hierarchical structure with a goal at the top level, the attributes/criteria at the second level and the alternatives at the third level.

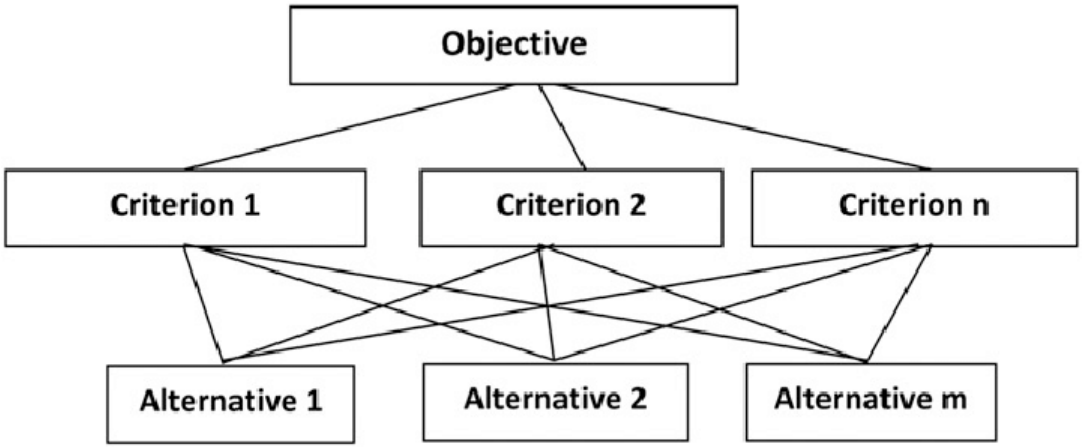

Fig 3.3 Hierarchical Structure

Determine the weights of the attributes with respect to the goal. Pairwise comparison matrix is created with the help of scale of relative importance.

3.4 TOPSIS (TECHNIQUE FOR ORDER OF PREFERENCE BY SIMILARITY TO IDEAL SOLUTION)

TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) is a multi-criteria decision-making (MCDM) method used to determine the best alternative among a set of alternatives based on their similarity to the ideal solution. We normalize the decision matrix. We then calculate the ideal best and ideal worst for each criterion and add it to the decision matrix indicate by V_j^+ and V_j^-.

Then we calculate the Euclidean distance from ideal best:

$$D_i^+ = \sqrt{\sum_{j=1}^{m} w_j \times (x_{ij} - v_j^+)^2}$$

where,

D_i^+ is the Euclidean distance from the ideal best solution for alternative i

Similarly, we calculate the Euclidean distance from ideal worst. Finally, a relative closeness coefficient is calculated to rank the alternatives.

3.5 PROMETHEE (PREFERENCE RANKING ORGANIZATION METHOD FOR ENRICHMENT OF EVALUATIONS)