AIJ and AIP

Prioritization and decision making is often performed in a group context. There are two ways to aggregate individuals' judgments and preferences with AHP, depending on whether the group is assumed to act together as a synergistic group in achieving common objectives, or as separate individuals, each with their own objectives. An example of the former is a group of department heads meeting to set corporate policy. An example of the latter is a group consisting of representative constituencies with stakes in welfare reform, such as taxpayers, those on welfare, welfare providers, politicians, etc.

In the former case, which is by far the most common, the individual judgments are combined by taking the of the judgments to derive a "combined" set of priorities for each cluster of objectives in the hierarchy, as well as for alternatives with respect to each of the covering objectives. This is referred to as Aggregating Individual Judgments, or . It has been shown that the geometric mean is the only aggregation method that will assure that the reciprocal axiom of AHP holds for the combined judgments in a matrix of combined judgments.

In the latter case, overall alternative priorities are computed for each participant and then an average of these priorities is computed. This is referred to as Aggregating Individual Priorities or . In this case, the objectives hierarchy for each participant need not even be the same.

NOTE: Due to the nature of AIP, objectives charts, grid, and all sensitivity analysis pages are disabled when AIP is selected.

If desired, weighted averages can be computed for each of the above two aggregation methods. Since the geometric average is the nth root of the product of each of the pairwise comparisons, it can be thought of as the product of each person's judgment raised to the $1/n^{th}$ power, where n is the number of participants. If all participants are considered to be equally important, this is equivalent to the product of each participant's judgment raised to the power of their priority. If all participants are not considered to be equally important, but have priorities designated by $w_1, w_2, \ldots w_n$, then the geometric average is simply the product of each person's judgment raised to the power of their priority.

For more information see:

Forman, Ernest H., with Peniwati, Kirti "Aggregating Individual Judgments and Priorities with the Analytic Hierarchy Process", European Journal of Operations Research, 108 (1998), 165-169.