GETTING PRIORITIES FROM A CROWD: COMBINING JUDGMENTS FROM PEOPLE WITH DIFFERING PERSPECTIVES

Thomas L. Saaty
University of Pittsburgh
Katz Graduate School of Business
Pittsburgh, PA 15230
saaty@katz.pitt.edu

As people examine and analyze complexity from different points of view, it is usual that increased perspectives eventually lead to confusion and disagreements – a standoff. Getting a jury to come to a decision is a good example of what we need to analyze for agreement among the members of a group. The object in choosing a jury is that its members should agree enough to reach a verdict. It is desirable that the different points of view be reconciled enough to arrive at a decision through agreement. However, agreement needs consistency among the jurors. A jury that cannot reach a verdict because of insufficient understanding is a failure because it has wasted time and resources. However, consistency of viewpoint is not the only concern in using a jury. We need validity in their verdict that conforms to the best interpretation of the facts of the case. But the larger the number on a jury or of any group seeking agreement, the greater is the likelihood of a diversity of points of view and of disagreement and therefore of inconsistency.

In the AHP we use the geometric mean in a cooperative decision making situation to combine the peoples' judgments on each pairwise comparison. If the people have different ability and expertise, we can prioritize them and use these priorities as the exponents of their numerical judgment and then take the geometric mean (in that case simply the product) of their judgments. But what if the individuals do not work together cooperatively? What should one do?

In practice if it is known that the judges do not wish to work together, each judge should make his or her pairwise comparison judgments throughout the entire structure, and arrive at the final answer in the form of an overall priority vector for the alternatives of the decision.

Suppose there are n judges. Their final priority vectors are combined by multiplying the corresponding elements of the priority vectors together and taking the nth root. In this case each judge has the same expertise or importance and all have the same priority: $1/n$, hence the nth root after multiplication. This is the same thing as taking the geometric mean of corresponding priorities.

If the judges have their own priorities according to expertise, as we do with their individual judgments mentioned before, we raise the corresponding elements of their respective final priority vectors each to the priority of the judge (their priority represents their power), then multiply them together to get the corresponding elements of the combined final vector. Normalize the combined vector if it does not sum to 1.

This is also the way to deal with judgments of a group with different backgrounds by appropriately clustering them and combining their final outcomes. In this case the groups are prioritized appropriately according to their knowledge and understanding or even according to the relative number in each group.

http://dx.doi.org/10.13033/ijahp.v4i2.160