Should we use AHP?

Analytical Hierarchy Process (AHP) is a form of multi criteria decision analysis (MCDA) developed by Thomas L. Saaty in the 1970s. It uses pair wise comparisons of the options based on their relative performance against the criteria. The comparisons can be simply whether one option is better than another on a specific criterion or (more complicated) how much an option is better than another.

The main arguments against AHP are as follows:

1. It is mathematically unsound. This is shown by rank reversal, which can occur even when using only one criterion. If you delete an option, the order of the remaining options can change.
2. When you make judgements in AHP you do not really know what you are saying. For example, if you say that option A is moderately preferred to option B, do you understand that this means that you like it three times as much? And what is three times as much in real units? This has huge implications in analysing results and with future reviews.
3. AHP requires many more judgements to be made, and these can easily be inconsistent. The number of comparisons to be made is dependent on the number of criteria and number of options being considered. So, for a small model of say 6 options and 7 criteria you need to do 126 comparisons. Assuming there is very limited debate and each comparison takes 5 minutes then it would take over 10 hours without a break to complete. So clearly, at the end, most people are very tired and quality suffers.
4. AHP is a one-way process, so you cannot adjust the scores if you receive new information. You also cannot add new options or criteria as the study evolves.
5. Decisions made using AHP cannot be reviewed at a later stage by an independent review since the judgements do not stand up to scrutiny since comparisons are subjective.
6. The black-box calculations make it impossible to see what is driving the results and it's easy to believe that the answer must be "right" even when it may be wrong.
7. It is a one-off process. You cannot account for new options, new criteria or new data as the study progresses.

In summary, multi attribute utility theory (MAUT) is to be preferred because:

- It is mathematically underpinned and accepted by all the major decision science faculties in the UK and US.
- There are fewer judgments to be made and those judgements are evidence based, so it is easier to document and easier to underpin.
- It is clear how the results follow from the input so people understand that the answer is a true reflection of their inputs.
- Most studies evolve and the options changes or the criteria are refined. The MAUT process enables these changes to take place without redoing the entire study again.
- Most decisions will be reviewed at some time in the future and the MAUT process is most more transparent and replicable.