

D.3.4 Inconsistency

As well as providing rankings based on judgments, Expert Choice™ provides a measure of consistency. This measure is useful in identifying possible errors in expressing judgments, as well as actual inconsistencies in judgments. The method does not actually preclude inconsistencies in judgments. On the contrary, the judgments recognize that different opinions as well as inconsistencies may well exist. To measure inconsistency, an Inconsistency Ratio (IR) is calculated below the final rankings for the relevant criteria, for a given node. Complete consistency gives an IR =0. The larger that IR is, the larger is the inconsistency. If IR is < 0.1, then the inconsistency is considered to be tolerable. If IR is > 0.2, then a re-examination of the judgments should be made, to ascertain whether they are still acceptable. It is important to emphasize, however, that the objective is to make good decisions, not to minimize the IR. Good decisions are most often based on consistent judgments, but the converse is not necessarily true.

D.4 Interpretation of Results

The results outputted from Expert Choice™ are all the figures in the form of horizontal black-bar-type histograms. These histograms provide the ranking, in order of decreasing importance, for the items being compared. The relative rankings are the calculated output using the pairwise comparisons made of the main and sub-criteria in the corresponding hierarchy models of Figures 1, 2 and 3. The labels on the left have their full name defined at the bottom of the histogram figures. The ranked items correspond to the lowest hierarchy level items of Figures 1, 2 and 3, as appropriate, which are shown with the cross-hatched borders. The accuracy of these rankings shown by the histogram length and also indicated as a fraction of a total of unity should not be assumed to be as good as the three-figure accuracy quoted on the left of the histogram display. The numerical rankings are more realistic, however, than an intuitive approach would provide. The three figure accuracy is available because some applications may input numerical data for comparisons, where the full accuracy can be justified.

Complete details on the pairwise assessments and the weightings of the main and sub-criteria derived are not included in the report. This data is available from the author.

D.5 References

- [D1] Expert Choice™ Inc., 4922 Ellsworth Avenue, Pittsburgh, PA, 15213.
- [D2] T. Saaty, Multi-Criteria Decision Making. The Analytic Hierarchy Process, University of Pittsburgh, 1988.
- [D3] T. Saaty, A Note on Decision Making and Number Crunching. Is Normalization the Answer ?, P.17 of Addenda for [A.1].