Spanning Set

Expert Choice employs an algorithm to determine when a spanning set of judgments has been entered for a cluster of elements, at which point priorities can be derived. A spanning set of judgments is such that every element can be "reached" from every other element. In the example below:

ID	Alternative Name	All Participants 7 with judgments
[08]	AS/400 Replacements	52.74%
[03]	Cisco Routers	61.76%
[17]	Customer Service Call Center	60.38%
[13]	Desktop Replacements	49.19%
[04]	EMC Symmetrix	52.77%
[12]	Firewall and Antivirus Licenses	56.75%
[05]	Iron Mountain Backup Service	59.98%
[11]	Laptop Replacements	32.78%
[15]	Mobile Workforce Pocket PCs	32.71%
[09]	Oracle 9i Upgrade	57.69%

Relative judgments have been made for:

- A to B
- A to C
- B to D and
- D to E

And form a spanning set.

Some spanning sets are obvious -- for example, the top row of judgments would be a spanning set as would the main diagonal.

A cluster of *n* elements would require *n*-1 elements in a minimum spanning set.

Any judgments beyond the minimum number for a spanning set are called "redundant" because they are not needed to compute priorities. They are necessary, however, to improve the accuracy of the priorities, especially in the case of verbal judgments.

Since the *n* - 1 judgment in a minimum spanning set contains no "redundancy," the inconsistency ratio will be zero. This is a good reminder that a low inconsistency does not imply accurate results. A relative low inconsistency is necessary but not sufficient for accurate results. Making one more judgment than the minimum number in a spanning set will generally

increase the accuracy of the resulting priorities while also increasing the inconsistency above 0.

See also: Missing judgments