Using Paired Comparison to Achieve Consensus

John Marsh, Total Quality Partnerships, United Kingdom
and Todd Bergman, Mt. Edgecumbe High School, State of Alaska

Paired Comparison is a powerful voting, prioritization and consensus technique. It can be used by an individual, but is more commonly used by a team, to prioritize a range of options or root causes(those vital and systemic for improvement). By comparing each option with every other option, scores and rankings are created. The degree of consensus in the team can be explored by producing histograms of the scores for each option. Areas of disagreement can then be focused on.

Paired Comparison is a subjective, opinion based technique. It is used in the absence of hard data, where precise cause and effect linkages are difficult to measure and when dealing with feelings and opinions. It is not a substitute for data collection and data analysis.

Typical applications include; identifying 'the critical few' root causes, prioritizing factors for success and prioritizing possible solutions. In fact it is applicable whenever consensus needs to be achieved concerning a number of options.

The Technique

Paired Comparison utilizes three linked forms: the "Paired Comparison Chart" and a "Totals Table". In addition, a "Summary Table" may be constructed. The procedure is as follows:

1. Agree on a short list of options. These could be root causes, success factors, possible solutions, etc. The technique works best with between 6 to 12 options. Sometimes it is necessary to use shortlisting techniques to arrive at the desired number of options.

2. List the options in no particular order and number them on a flip chart.

3. Ensure that the team is clear on the subject to be considered.

4. Give each team member a "Paired Comparison Chart" and ask them to fill in the subject, their name and to copy the options from the flip chart using exactly the same numbering.

5. The concept behind the technique is that each option in the list is compared with every other one in a pair, hence the name Paired Comparison. It forces the user to decide between one of two options.

   If the team is analyzing root causes the decision could be which is the greater cause of the problem.

   If the team is prioritizing solutions the decision could be which solution will fix or prevent the problem more effectively.

6. Each individual completes the voting matrix on the Paired Comparison Chart. Always start on the first row, first column and work across the row.

In the box on the first row first column there are the numbers 1 and 2. This instructs the user to compare item 1 with item 2. The user rings the number that represents the greater cause of the problem or the better solution depending on the application. Ensure that everyone is clear on the decision.

7. Still on row 1, move to column 2 and repeat, this time comparing item 1 with item 3. Continue until row 1 is complete.

8. Now move to row 2. Because the comparison between 1 and 2 was done in row 1 this is not repeated so the first comparison in row 2 is between 2 and 3. Complete row 2.

9. Continue until all rows are completed.

10. The user now adds up the score. This is more complicated than it looks. For example when adding up the score for option 5, look for a horizontal row of fives. Count the number of ringed 5's moving from the left to the right of the matrix. When the end of the row is reached move up one and then go diagonally to the right. This pattern identifies all the comparisons for one option.

11. Complete the totals column on the right-hand side of the "Paired Comparison Chart". For eight options this must add up to 28.

12. The Facilitator now collects all the individual scores onto the "Totals Table". The total scores and rankings can be calculated

13. More information can be gained by producing histograms of the scores for each option.

14. Present the results back to the team for a facilitated discussion, focusing on the areas of least consensus.

Interpreting the Results

Paired Comparison generates four pieces of information, the individual's score, the team's score, the team ranking and the degree of consensus. Total scores should be used cautiously. If several options have similar scores they should be considered together.

The histograms for each option show the degree of consensus in the team and are important for understanding some of the deeper issues. If the degree of consensus is high and the participants truly reflect the views of the stakeholders, then this result can be considered reliable. The only danger is one of "group think" where the participants are so close to the problem they have already convinced themselves of the issues. The facilitator needs to be aware of this possibility.

If little consensus is achieved, or the histogram shows polarity, further investigation is required. Sometimes the disagreement arises because of confusion over definitions or with "Chicken and Egg" scenarios. Other times it represents true differences of opinion. In this cases focus on the areas of lack of consensus and get those who are at the extremes to explain their reasoning. Further evidence may need to be collected before

consensus can be achieved. The team may wish to repeat the Paired Comparison to see if there is more agreement as result of the discussion.

In Summary

The short list of options used in a paired comparison could be root causes, success factors, possible solutions, and may have come from a variety of stakeholder techniques aimed at the identification of improvement needs. The paired comparison is a technique to gain prioritization and consensus. The stakeholders providing input for the improvement effort must be involved throughout the whole improvement process including any brainstorming and shortlisting. It is strongly advised that you do not preset a list of options to be prioritized. An example would be front end loading a paired comparison aimed at prioritizing budget reductions. A prioritization of improvement needs will result allowing the formation of processes to implement improvement. It is important to point out that study of any improvement work is a must. Plan, do, study, act is crucial to any improvement effort!