

Cause & Effect Analysis

Identifying the likely causes of problems

Cause and Effect Diagrams help you to think through causes of a problem thoroughly. Their major benefit is that they push you to consider all possible causes of the problem, rather than just the ones that are most obvious.

The approach combines brainstorming with use of a type of concept map.

Cause and Effect Diagrams are also known as **Fishbone Diagrams** because a completed diagram can look like the skeleton of a fish; and as **Ishikawa Diagrams**, after Professor Kaoru Ishikawa, a pioneer of quality management, who devised them in the 1960s.

How to Use the Tool

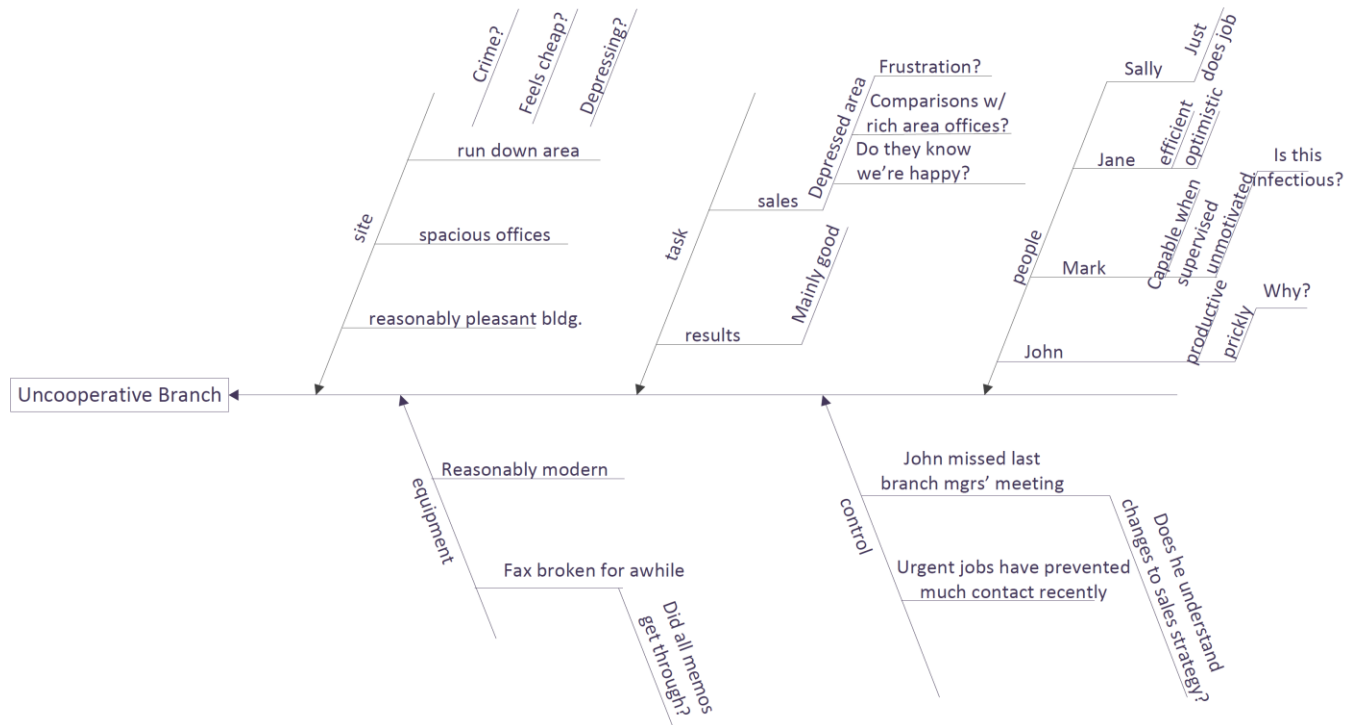
Follow these steps to solve a problem with a Cause and Effect Diagram:

1. *Identify the problem:*
Write down the exact problem you face in detail. Where appropriate identify who is involved, what the problem is, and when and where it occurs. Write the problem in a box on the left hand side of a large sheet of paper. Draw a line across the paper horizontally from the box. This arrangement, looking like the head and spine of a fish, gives you space to develop ideas.
2. *Work out the major factors involved:*
Next identify the factors that may contribute to the problem. Draw lines off the spine for each factor, and label it. These may be people involved with the problem, systems, equipment, materials, external forces, etc. Try to draw out as many possible factors as possible. If you are trying to solve the problem as part of a group, then this may be a good time for some brainstorming.
3. Using the 'Fish bone' analogy, the factors you find can be thought of as the bones of the fish.
3. *Identify possible causes:*
For each of the factors you considered in stage 2, brainstorm possible causes of the problem that may be related to the factor. Show these as smaller lines coming off the 'bones' of the fish. Where a cause is large or complex, then it may be best to break it down into sub-causes. Show these as lines coming off each cause line.
4. *Analyze your diagram:*
By this stage you should have a diagram showing all the possible causes of your problem. Depending on the complexity and importance of the problem, you can now investigate the most likely causes further. This may involve setting up investigations, carrying out surveys, etc. These will be designed to test whether your assessments are correct.

Another way of building a Cause and Effect diagram with a group is to use Post-It® Notes to write down all of the possible causes. You can then group the similar ones together on the diagram. This approach is sometimes called CEDAC (Cause and Effect Diagram with Additional Cards) and was developed by Dr. Ryuji Fukuda, a Japanese expert on continuous improvement.

Example

The example below shows a Cause and Effect diagram drawn by a manager who is having trouble getting cooperation from a branch office:



If the manager had not thought the problem through, he might have dealt with the problem by assuming that people were being difficult.

Instead he might think that the best approach is to arrange a meeting with the Branch Manager. This would allow him to brief the manager fully, and talk through any problems that he may be facing.

Key Points

Cause & Effect analysis (or Fishbone Analysis) provides a structured way to help you think through all possible causes of a problem. This helps you to carry out a thorough analysis of a situation