

Analyze Potential Causes – Fishbone Diagram

Analyzing potential causes is the part of the problem solving process where information about the factors that are contributing to the problem need to be explored. A common mistake at this stage is to assume you know what is causing a problem without taking the time and effort to dig deeper. Without a thorough root cause analysis the team may end up addressing symptoms instead of the causes, resulting in the problem resurfacing later.

One tool to help problem-solving teams analyze potential causes is the Fishbone Diagram (also referred to as the Cause and Effect diagram, or Ishikawa diagram). The name fishbone comes from the shape of the diagram, which resembles the skeleton of a fish.

In some situations, such as in the case of broad company-wide problems, it may be better to begin with brainstorming causes without the structure or constraints of a Fishbone Diagram. The problem-solving team can identify a wider range of possibilities, which will allow for more creative solutions. The disadvantage of the brainstorming technique is that an additional step is required to categorize and organize the possible causes before moving to the next step of the problem solving process.

As you are analysing the causes keep in mind the 80/20 rule (also called the Pareto Rule), which states that "80 percent of the effect can usually be attributed to 20 percent of the cause." This will help you organize and prioritize the causes, and select the one or two to address to yield the greatest improvement.

How to Use the Fishbone Diagram

1. Write your problem statement

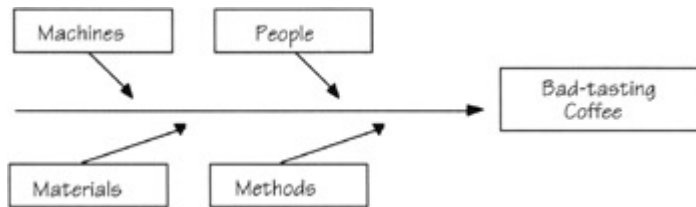
Write your problem statement in a box on a large sheet of paper. For example, suppose the vending machine produces "*bad-tasting coffee*" all the time. Our first step on the Cause and Effect Diagram would look like:



2. Define the major categories of causes

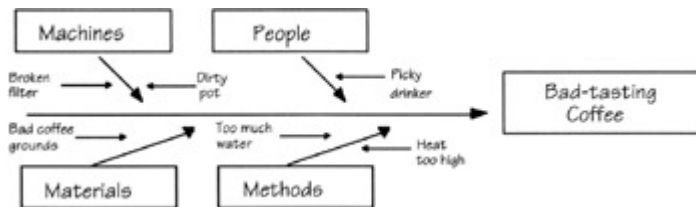
Select the categories to use to categorize the causes of the problem. Categories can be tailored to your specific problem-solving needs. Commonly used categories include:

- Materials, Methods, Machines, and People (the 3 M's and a P), or
- Surroundings, Suppliers, Systems, and Skills (the 4 S's), or
- Product, Promotion, Place and Process (4P's) and so on, depending on the situation.

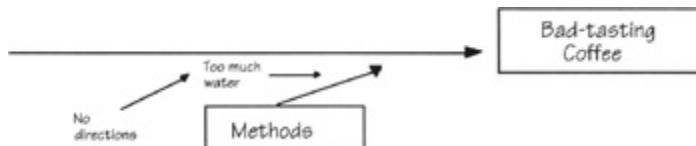


3. Brainstorm possible causes in each category

Come up with as many ideas as you can for each category. For example, under machines, we note that the filter is broken.



Sometimes one cause can build from another cause. For example:



4. Identify the most likely causes

Avoid jumping to solutions while identifying possible causes. Look at all of the possible causes and narrow them down to the most likely causes. Make certain the most likely causes are real which means you may have to gather more information.

Fishbone Diagram Worksheet

