

FISHBONE DIAGRAMS

Purpose

The fishbone diagram—so called because of its resemblance to a fish skeleton—is a cause-and-effect diagram that can be used to identify the potential (or actual) cause(s) for a performance problem. Fishbone diagrams provide a structure for a group’s discussion about the potential causes of a problem.

Needs Assessment Applications

Fishbone diagrams are often used in needs assessment to assist in illustrating and communicating the relationships among several potential (or actual) causes of a performance problem. Likewise, these graphical representations of relationships between needs (or discrepancies between desired and actual results) offer you a pragmatic tool for building a system of performance-improvement interventions—for instance, a combination of mentoring, using job aids, training, enhancing motivation, and arriving at new expectations—around the often complex relationships found across potential (or actual) causes.

Advantages and Disadvantages

Advantages

- Fishbone diagrams permit a thoughtful analysis that avoids overlooking any possible root causes for a need.

- The fishbone technique is easy to implement and creates an easy-to-understand visual representation of the causes, the categories of causes, and the need.
- By using a fishbone diagram, you are able to focus the group on the big picture as to possible causes or factors influencing the problem or need.
- Even after the need has been addressed, the fishbone diagram shows areas of weakness that—once exposed—can be rectified before causing more sustained difficulties.

Disadvantages

- The simplicity of a fishbone diagram can be both its strength and its weakness. As a weakness, the simplicity of the fishbone diagram may make it difficult to represent the truly interrelated nature of problems and causes in some very complex situations.

Process Overview

1. Identify gaps between the results (or performance) that are required for the successful accomplishment of your program's or project's results chain (also commonly referred to as a results framework, logic frame, or logic model) and the current achievements to date.
2. Generate a clear, concise statement of the need(s). Make sure that everyone in the group agrees with the need as it is stated. For example, the application of modern agricultural techniques among the population is at 25 percent, and the aim of your program or project is for 75 percent of the population to use modern techniques (leaving you with a gap or need of 50 percent).
3. Using a long sheet of paper or a white board, draw a horizontal line. This line will be the spine of the fish. Write the need along the spine, on the left-hand side.
4. Identify the overarching categories of causes of the need. Brainstorming is often an effective technique for identifying the categories of causes. For each category of causes, draw a bone—a line at a 45-degree angle from the spine of the fish. Label each bone (see figure 3B.1) with the cause categories; for instance, categories could include materials, knowledge or skills, time, motivation, incentives, performance feedback, and others.¹
5. Have the group brainstorm to identify the factors that may be affecting the cause or the need or both. For each category of causes, the group

should be asking, “Why is this happening?” Add each “why” to the diagram, clustered around the major cause category it influences.

- Repeat the procedure by asking, “Why is this happening?” for each effect until the question yields no more meaningful answers (see figure 3B.2).

Figure 3B.1 A Basic Fishbone Diagram

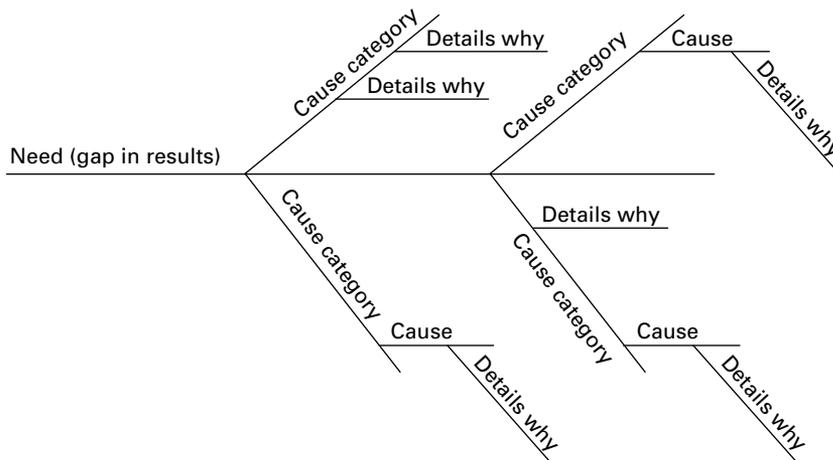
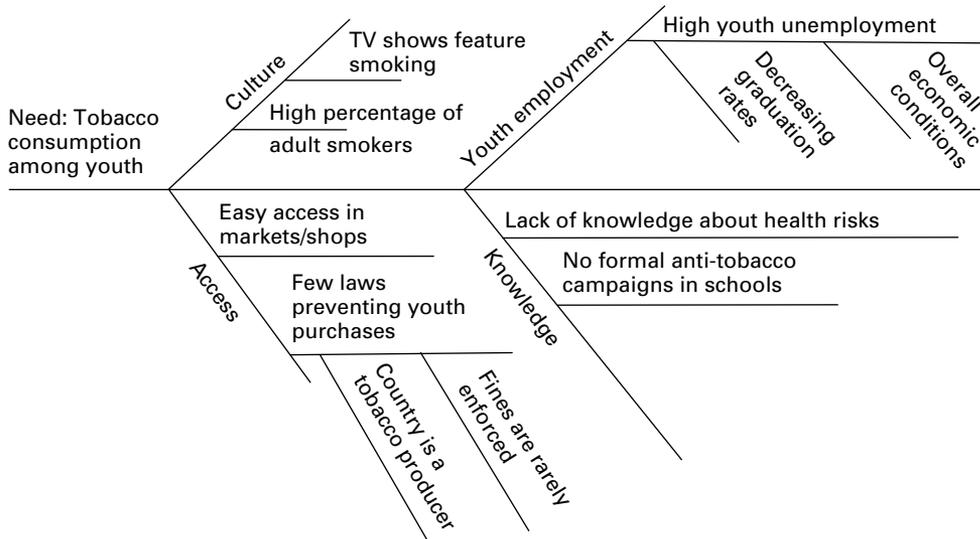


Figure 3B.2 An Annotated Fishbone Diagram



7. When the group has reached a consensus that the diagram contains an adequate amount of information, analyze the diagram. In particular, look for causes that are appearing in more than one section of the diagram.
8. Circle anything that seems to be a root cause for the need. Prioritize the root causes, and decide to take action, a move that may involve further investigation of the root causes.

Tips for Success

- Make sure that the group has consensus about both the need and the characteristics of the cause statement before beginning the process of building the fishbone diagram.
- If appropriate, graft (add) branches that do not contain a lot of information onto other branches. Likewise, you can split branches that have too much information into two or more branches.
- Make parsimonious use of words while populating the fishbone diagram. Only use as many words as necessary to describe the cause or effect.

Note

1. Also see the performance pyramid tool (page 236) for additional categories that may be applied.

References and Resources

- Altschuld, James W. 2010. *Needs Assessment Phase III: Collecting Data* (Book 3 of *Needs Assessment Kit*). Thousand Oaks, CA: Sage Publications.
- Altschuld, James W., and J. N. Eastmond Jr. 2010. *Needs Assessment Phase II: Getting Started* (Book 2 of *Needs Assessment Kit*). Thousand Oaks, CA: Sage Publications.
- Gupta, Kavita, Catherine M. Sleezer, and Darlene F. Russ-Eft. 2007. *A Practical Guide to Needs Assessment*. San Francisco: Pfeiffer.
- Witkin, Belle Ruth, and James W. Altschuld. 1995. *Planning and Conducting Needs Assessments: A Practical Guide*. Thousand Oaks, CA: Sage Publications.

Websites

Cause analysis tools (American Society for Quality has an example of a fishbone diagram) are available at <http://www.asq.org/learn-about-quality/cause-analysis-tools/overview/fishbone.html>.

The fishbone diagram (Six Sigma has templates for making fishbone diagrams in Microsoft Word and Microsoft Excel) is available at http://www.isixsigma.com/index.php?option=com_k2&view=item&id=1416:the-cause-and-effect-aka-fishbone-diagram&Itemid=200.

“Use a Fishbone Diagram to Help Attack Complex Problems” (from TechRepublic) is available at http://articles.techrepublic.com.com/5100-10878_11-6092236.html?tag=nl.e053.