

First of Seven Quality Tools: How to Use a Cause-and-Effect Fishbone (Ishikawa) Diagram in Sales and Marketing

By Michael J. Webb and Robert Ferguson

Helping sales and marketing executives apply the basic quality tools to their business problems can be an eye-opening and profitable experience for them. One of the most useful devices for leading these discussions is the Cause and Effect, “Fishbone,” or Ishikawa diagram.

Background

Ishikawa diagrams were first used in 1960s Japan by Kaoru Ishikawa, who pioneered quality management processes in the Kawasaki shipyards to help teams of engineers to understand a problem by relating a complex set of factors. This diagram helps the team visualize and organize their understanding of causes and effects relating to a problem they want to solve. It is a visual means of “Asking Why Five Times,” a cornerstone of Ishikawa’s thinking.

The practice was so universally applicable and effective it ultimately became one of the “seven basic quality tools,” along with the histogram, Pareto chart, check sheet, control chart, flowchart, and scatter diagram. It is known as a fishbone diagram because of its shape, similar to the side view of a fish skeleton.

Fishbone diagrams are especially useful in sales and marketing because work groups are usually organized along traditional, functional lines. This can hinder people from naturally seeing the causes and effects of systemic performance, such as in Finding, Winning, and Keeping customers. The fishbone is an excellent way for a team to work through a problem based on evidence and logic rather than on preconceived notions of how things are supposed to work. It quickly paints a good visual map of potential causal relations that can be proven out with evidence and use of other quality tools. Salespeople

are typically very creative and with proper facilitation will quickly be able to fill in the chart with good, starter information that can be further refined.

The fishbone is typically a strategic tool best used to improve a large work system—not so much for diagnosing a sudden spot failure. The tool is strategic in that if the deeper root causes are not addressed, performance will likely continue into the future.

Elements of a Fishbone Diagram

Fishbone diagrams for problem solving consist of the following elements:

- *Undesirable result.* This is the business gap that needs to be closed, based on some measurement observations, typically over months or years. It is normally drawn first, in a box on the right side of the diagram. It is the head of the “fish”—the poor or undesirable effect you are experiencing.
- *Spine and big bones.* These answer the initial question “why?” are we experiencing the undesirable result. They consist of broad categories or process performance elements to capture possible reasons or causes for the problem. Traditionally, these include “man, machines, measurement, materials, methods, and environment.” However, these categories are better modified for sales and marketing usage as follows in Figure 1:

<u>Sales/Marketing Process Performance Elements</u>	<u>Generic Elements</u>
People (involved in the sales system)	Man
Systems and Tools (including Internet)	Machines
Measurement (data collection, interpretation)	Measurement
Sales/Marketing Methods (training, skills, etc.)	Methods
Market/Customer Environment	Environment
Materials (mailing pieces, demo equipment, etc.)	Materials

Figure 1: Sales and marketing fishbone elements

- *Smaller bones.* These are the answers to the secondary (through perhaps fifth level) questions of “why,” getting ever closer to root causes. Several levels of sub-causes may be required, though more than five layers of sub-causes is an indication that the “Undesirable result” may be too big a problem, and should be broken into smaller pieces. Some potential root causes may appear in several big bone categories. One global company discovered that “lack of internal product design capability” was crippling in several major areas, a true root business issue. Correcting this required years of work but resulted in major success.

The general format of the Fishbone diagram is shown in Figure 2.

How to Create a Fishbone Diagram

The procedure for creating a fishbone is simple: write the undesirable result in a box on the right side of a white board or chalk board, draw lines for the main elements of the fish bones, then begin brainstorming the potential causes, locating them along the appropriate bone of the fish. The challenge comes in the clarification, rewriting, and reorganizing of the various causes.

Like any structured brainstorming technique, the fishbone diagram collects and organizes the words and insights of everyone who participates. Visually arranging their words in causes and deeper sub-causes requires the team to spell out their beliefs more clearly than they may have done in the past. The discussion that occurs is similar to the “five whys” exercise, where you keep asking and answering the question “why” until you get to a point that cannot be broken down any further. Ideally, each element on a fishbone will be a process variable, though it can take several iterations to accomplish that.

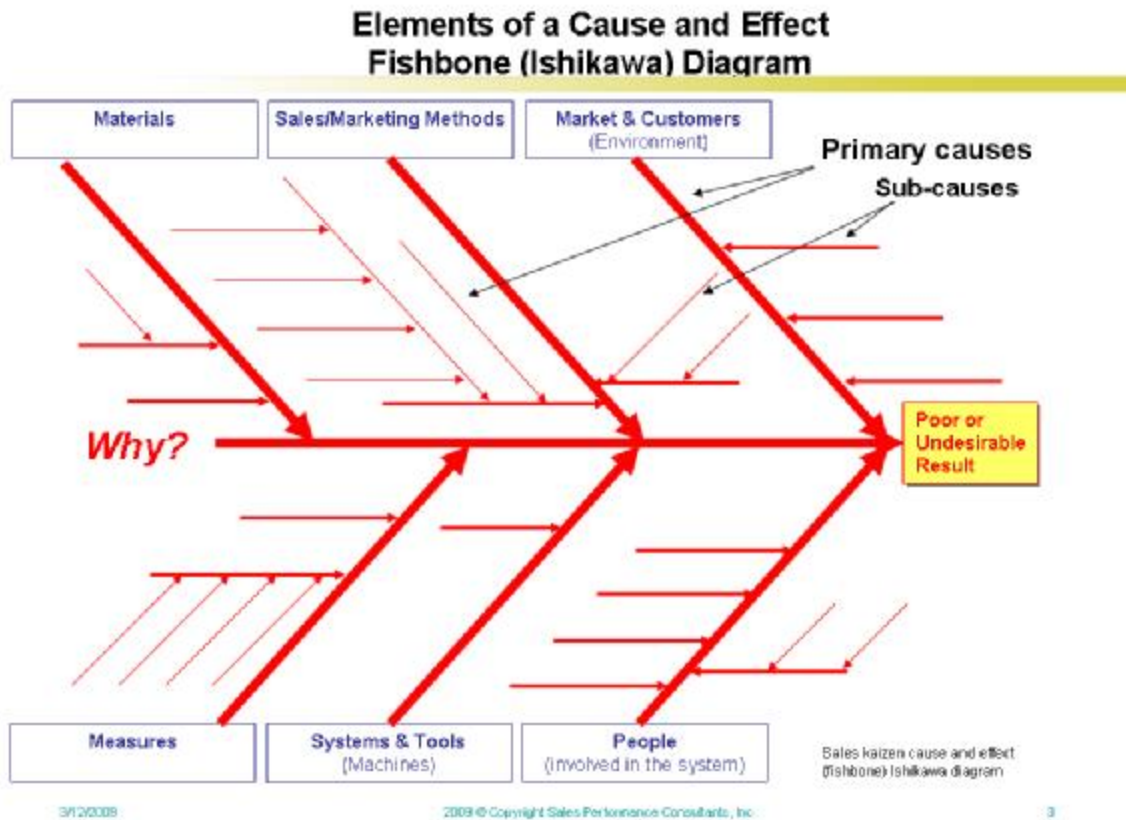


Figure 2: Elements of a Fishbone Diagram

Creating a fishbone diagram is often not a simple, one-time event. When teams begin this approach for the first time, it is normal for them to require lots of erasing and reorganizing of the causes and effects. The discussion may go on for a few hours, or for the better part of a day or more. It is common for the team to make good progress on the fishbone, and then do research or some pilot testing, returning to enhance the fishbone weeks later.

The learning and discussions that are produced in the creation of a fishbone diagram are quite valuable:

- The discussions clarify and educate the participants on how the process really works.

- Areas where there is disagreement or where there is no information become likely targets for inquiry or research.
- The diagram becomes a more complete representation of knowledge than any of the participants previously had on their own.
- The smaller sub-cause bones get closer and closer to root causes for the problem you are trying to solve, and sometimes global solutions can be achieved.

Finding the root causes is the secret to making real changes in the business and its results. Sometimes, the fishbone diagram is all that is required for the team to realize the likely culprit(s). When this happens, they can devise a pilot project that addresses the root cause to test that theory. If the pilot produces the desired results, they can begin planning how to scale the change more broadly.

Other times, the solution may not be as clear, and may require gathering further information. Preparing a Pareto chart of that additional information can be very helpful to prioritize or clarify aspects of the situation. Or, in a more advanced situation, the bones of the fish could be transferred to a more sophisticated X-Y style cause and effect diagram for further, more detailed study. (The X-Y diagram, commonly used in six sigma projects, places causes and effects in a matrix so they can be correlated in more advanced ways.)

Using a Fishbone Diagram in Sales and Marketing

Let's consider a simple example of a fishbone diagram in a sales and marketing environment. The example we will use is focused on the problem of not enough leads. This is a good example, because it is generally a cross functional problem. Even if your organization is not prepared to deal with the problem cross functionally, it can be very helpful to identify all the relevant factors, or causes, at issue. Figure 3 illustrates such a diagram, although it is somewhat simplified for our purposes.

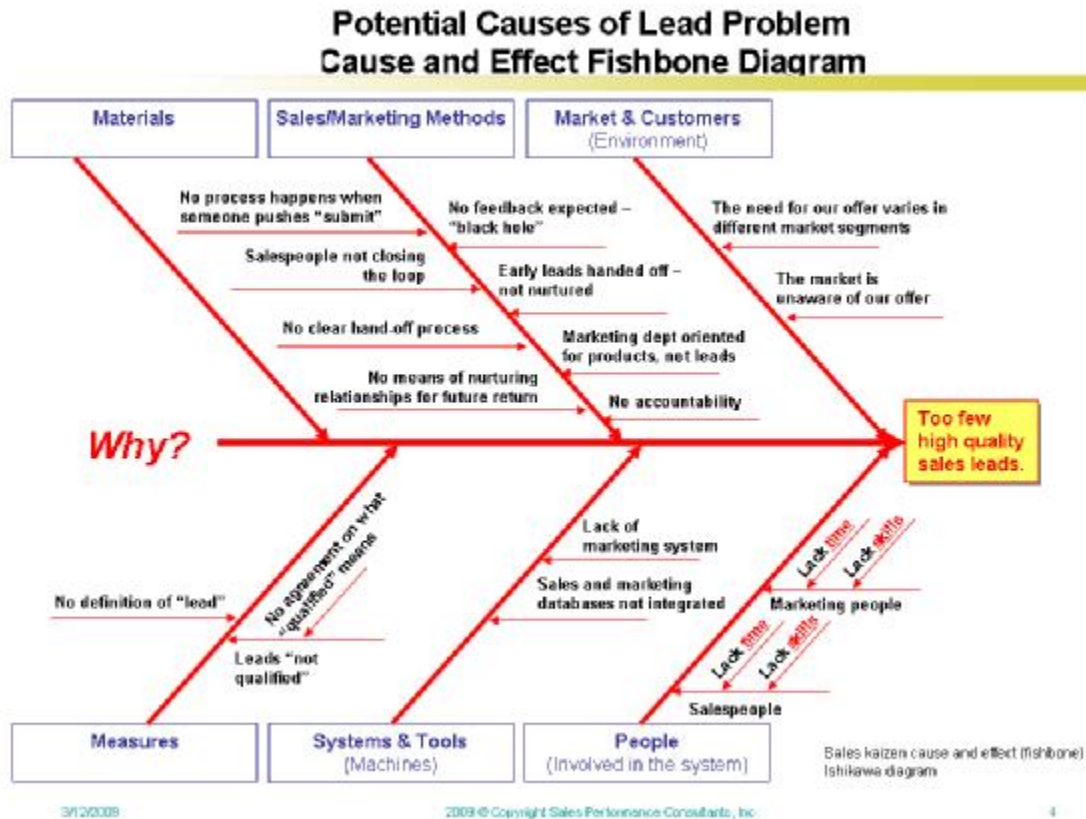


Figure 3: Example of a Fishbone Diagram in Sales and Marketing

The first thing to notice is the expression of the problem, or undesirable result. “Low quantity and quality of leads is obviously measurable. You could chart the numbers of leads over time. You could compare the numbers of leads claimed by the various salespeople, or compare the marketing department’s production of leads to what salespeople believe they received.

Do not proceed with the details of a fishbone diagram until the group has agreed on the problem, or undesirable result, you are trying to improve. Do not allow someone to define the problem in terms of their “pet” solution (e.g., “Our problem is our salespeople need training”), or in vague, non-concrete terms. Rational approaches tie to hard evidence, observations of reality that other people can count. You will know your team has made progress when they can express the problem in terms of something that they can measure, and they all agree on what that measurement is. If different measures come

up, it may be necessary to create multiple fishbone diagrams. Each should be aimed at a single, measurable objective, problem, or undesirable result. Sometimes people want to name the result in terms of a positive outcome and determine the positive causes of such an outcome. While this seems nice and cheery, experience has not been good with this approach. Human nature is much more creative on the negative side for reasons why things go wrong, not right.

The second thing to notice is the use of the main bones of the fish. These categories are designed to encompass all possible causes for the problem. The idea is to ask what are the issues related to “X” that could be causing the problem? Consider the first lower branch: People (Involved in the system). Who are the people involved that could be causing this problem? We have listed out salespeople, and marketing people. Is there anyone else involved? There could be ... how about customer service people. Could they be involved in lead generation in some way in your business? If they could, they belong on a branch of the diagram. You could ask further, “What are the issues related to people that could be causing the problem?” This could prompt someone to bring up compensation, or language problems, or human resource policies, or something else entirely. One of the key benefits of the fishbone is as a means of systematically identifying all possible causes, and combing through them in search of the real culprits.

Likewise, we have identified people’s lack of time and lack of skills as sub-causes of the problem. You could ask, “Why do people have a lack of skills or time?”

This is precisely the kind of pointed question that the fishbone diagram is meant to help you ask of your team members. It causes them (and you) to think in ways you may not have considered before. The result is new information you can capture and deal with.

Creating a good fishbone diagram involves picking through each main bone of the fish in this way, asking your team these kinds of questions. Notice on the branch titled, “Sales/Marketing Process,” one of the items listed is “Marketing dept oriented for products not leads.” Remember what we said earlier, that the items on the fishbone

should be process variables, which means “aspects of the process that are specific, measurable, and may, or may not, be controllable?”

Is “Marketing dept oriented for products not leads” specific, measurable, or controllable?

This is clearly not a measurable statement. Commonly, you will get this kind of vague statement as you work your way through the diagram. As in any brainstorming effort, you have to balance getting input from the team with editing that input. Good facilitators establish “ground rules” at the outset (e.g., no personal attacks, complaints, or vague statements are acceptable; only verifiable, measurable facts, explanations, causes, etc.) At first, you want them to tell you anything they can think of just to get things flowing and to capture the general ideas. Then, you go back to clarify and refine them.

In this case, the statement might ultimately be refined to something more specific and measurable, such as “Marketing department not staffed for lead generation efforts,” or “No clear lead generation goals for marketing department.” Obviously, the marketing department would have a lot to say about this issue, so it is best if they are actively involved!

Finally, as you get deeper into sub-causes, the same one might appear in multiple branches of the diagram. For example, qualification criteria definitions could be considered a measurement problem, and it could also be considered a process problem as well.

Conclusion

The point of creating a fishbone diagram is for the team to achieve a shared understanding of the problem, and of the world of causes that can be eliminated or proven out. The outcome is either 1) agreement on likely causes of the problem so potential solutions can be tested (if it is a controllable cause), or 2) agreement on where further research is needed to understand the problem more thoroughly.

In any case, the fishbone diagram is an extremely useful tool for guiding and framing a team's recognition of the problem, and the likely solutions.

Side bar: Benefits of the fishbone diagram

- Helps to find all possible causes of the problem, rather than just the most obvious
- Helps to determine the root causes of a problem in a structured way
- Encourages group participation and utilizes group knowledge of the process (collects knowledge from all group members)
- Helps focus on the causes of the issue with out resorting to complaints and irrelevant discussion
- Uses an orderly, easy-to-read format to diagram cause-and-effect relationships
- Increases knowledge of the process by helping everyone to learn more about the factors at work and how they relate
- Identifies areas for further study where there is a lack of sufficient information
- Highly visual, team oriented, usually fun to do as it is live detective work.

About the Authors

Michael J. Webb, president and founder of Sales Performance Consultants, is the foremost expert on sales process improvement. Michael has helped business executives of Fortune 500 as well as tiny start ups to improve sales and marketing results by eliminating waste and making the sales funnel flow faster.

Michael delivered the keynote address to the first two conferences ever held on applying Six Sigma to marketing and sales. He has helped companies such as MAQUET, Thermo Fisher Scientific, Marriott, WaterFurnace, DDI, and many others to identify bottlenecks, change behaviors, increase close ratios, and improve forecast accuracy. He also has extensive sales training facilitation and field coaching experience with hundreds of sales people and managers in the U.S. and Canada.

Michael is the author of “Sales and Marketing the Six Sigma Way” (Kaplan, 2006) and numerous articles. He holds several professional certifications, and has a BS in Mathematics from Southeast Missouri State University.

Robert K. Ferguson has an extensive background in sales process design and rapid improvement systems. He has won major awards from Fortune 100 clients, been involved in advanced quality and Lean manufacturing case studies, contributed to several publications, and had speaking engagements with the American Marketing Association and ASQ.

Trained in Lean and Kaizen in the U.S. and Japan, Robert is a former vice president of Bristol-Myers Squibb and has held operations, sales/marketing, and general management positions with various companies. His industrial sales process work at DuPont Automotive was benchmarked and ranked best in class, worldwide by Xerox.

More recently Robert was CEO and co-founder of ValueNetex Corporation and Value Reporter LLC, software companies that were engaged in business improvement strategies and products. Robert has a BS in Industrial Engineering from Kettering University and graduate work toward an MBA.