

BUSINESS VITAMINS

Fish Bone Diagram

Introduction

Kaoru Ishikawa invented the fishbone diagram in the 1960s. He was a Japanese professor and a quality management innovator of his time. The fishbone diagram is also known as the Ishikawa diagram, as a tribute to its creator. A fish-bone diagram is one of the seven quality circles (QC) tools. It helps to visualize the potential causes to find the root cause of a particular problem. It helps to identify, analyze, and improve quality issues. Sometimes, it can also be helpful to analyze what can go wrong - preventing future problems.

Definition

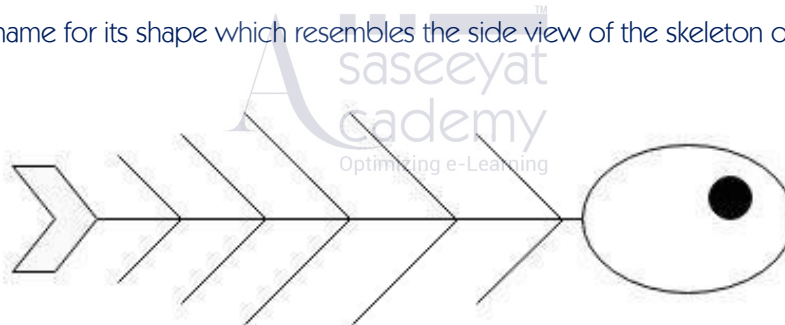
The fishbone diagram or Ishikawa diagram is a cause-and-effect diagram that helps managers to track down the reasons for imperfections, variations, defects, or failures.

When to Use it

1. To analyze a complex problem with many causes.
2. To identify possible root causes for an effect or a problem.
3. To uncover bottlenecks and identify issue where and why a process doesn't work.
4. To accelerate thinking process when traditional ways of problem solving are time consuming

Details

The fishbone diagram derives its name for its shape which resembles the side view of the skeleton of a fish.



The "head" of the skeleton depicts the problem or effect, which is usually shown on the right. The "bones" extend on the left to show the different causes. The ribs denote categories or classification of causes for the analysis, which branch out into causes and sub causes. The branching depends on the levels required under each classification. The company Toyota which is a manufacturing company popularized a classification concept of 6 M's : Man , Machine, Material, Method, Measurement and Mother Nature. Some marketing/advertising companies use 7Ps: Product, Price, Place, Promotion, People, Positioning and Packaging.

Example:

XYZ Manufacturing Pvt. Ltd has a production unit that produces iron nails. Recently, they started facing the issue of the nails not conforming to their standard dimensions. Also, the nails were rusted by the time they were set for delivery. Here is the fishbone diagram for the company. The flowchart is shown on the next page.

The main problem is shown on the right, "Iron nails out of shape – rusting". The **man** category has two causes. There is a cause that the workman working on the nails production does not have enough training or that he or she is not experienced enough with the machines, method or working process of the iron nails. As a solution, the organization could give adequate training to the workmen working on the nails production unit.

Machine: The tool used to shape the nail was not aligned accordingly. The pressure of the coolant that is used to mitigate the heat developed during machining caused the movement of the workpiece – leading to a discrepancy of alignment. A thorough check of the machine and the machining operations should be done to get the desired nails.

Method: The turning process, the workpiece moved too fast which led to a distorted dimension of the nail.

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Measurement systems like tools are referred to here. The tools may not be correctly used for measuring the material. There could have been calculation errors

Material: The raw material was not cleaned properly because of this the nail was out of dimension when a machining operation was conducted on the nail.

The environment category has a cause and a sub-cause. The cause is moisture. Why was there moisture in the atmosphere? Answer: It was the rainy season. This is the root cause from the Environment category. Now, the company can look for solutions on how to overcome the problem of moisture content, especially if it was rainy or humid weather.

One important point to note is that the categories mentioned are only to give a sense of direction. All problems may not have caused by each of these categories. The categories can be changed depending on the problem or industry.

