

Other Frameworks of Problem Solving

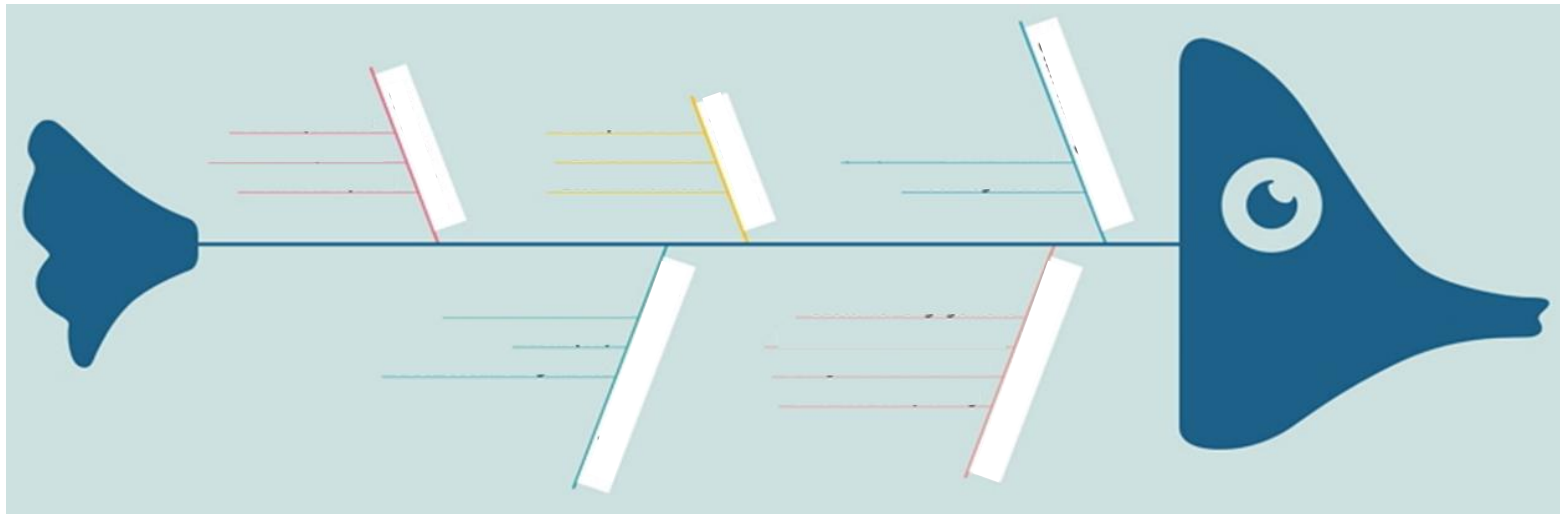
Problem solving is a core skill that allows you to analyze and solve complex issues. Effective problem solving is crucial for making informed decisions, overcoming challenges, and achieving desired outcomes. Structured thinking and the problem-solving frameworks, allow you to approach problems systematically, identify root causes, and develop targeted solutions.

As a data scientist, you will solve many types of real-world problems and not just the e-commerce problem. There are more frameworks which work better to solve various other problems. Let's look at a few of these problem-solving frameworks.

Now, let us look at one of the other most used frameworks – the fishbone diagram. This framework is also known as Cause-and-Effect diagram or the Ishikawa diagram. It is a visual tool used to identify and categorize potential causes of a problem. This framework helps you analyze the root causes by examining various dimensions and categories that contribute to the issue.

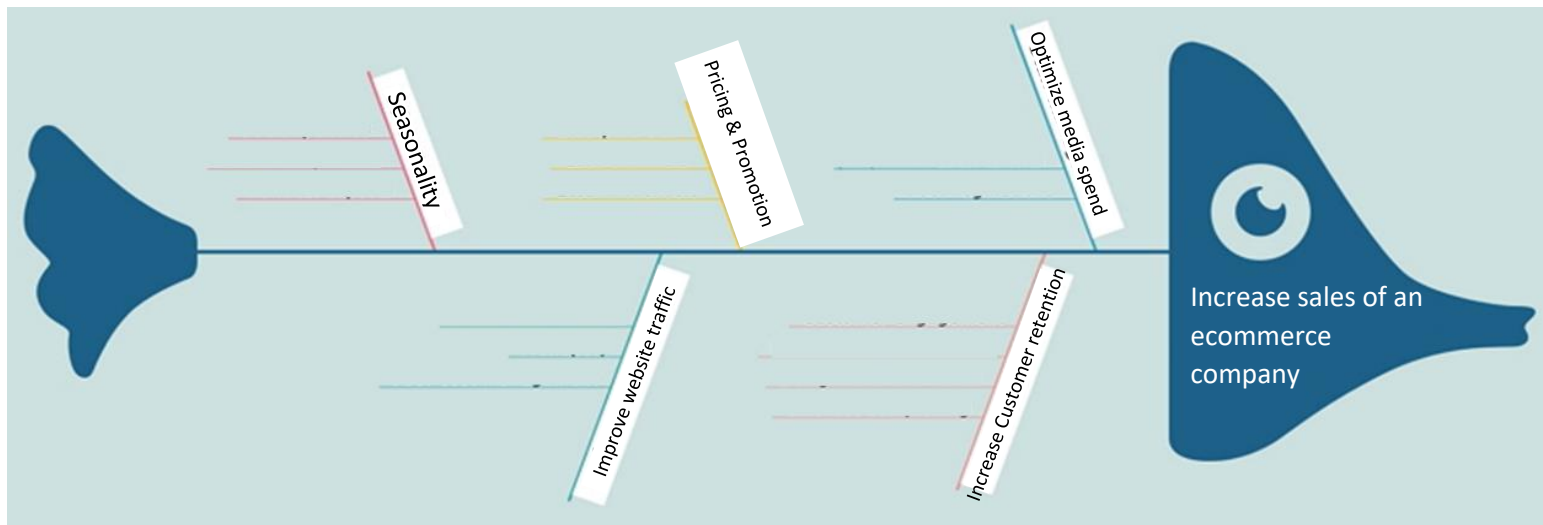
The Fishbone diagram typically consists of a central problem statement or effect, represented as the fish's head.

Now let's try to use the Fishbone diagram to solve the problem statement. At the head, you have the problem statement. You can use the bones to add the various areas, that include several branches and sub-branches.

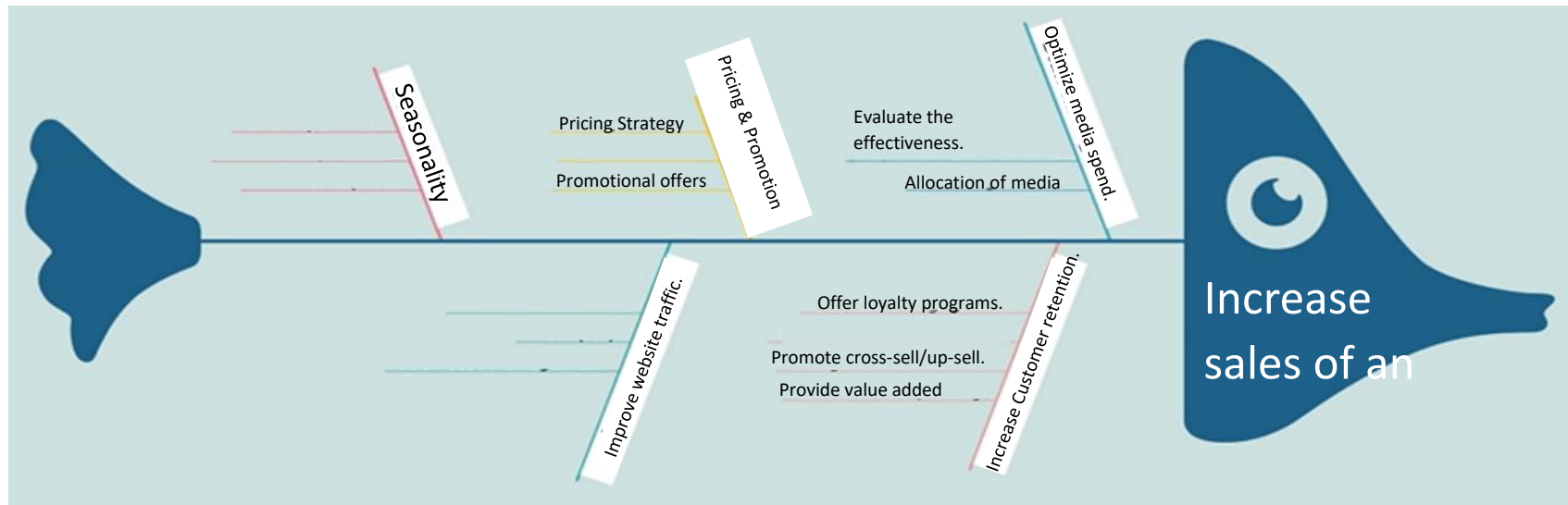


Using the fishbone diagram, you can represent the various categories of potential causes. you can include:

- people,
- processes,
- materials,
- environment.



And their sub-categories.



This framework encourages a comprehensive analysis of the problem and aids in developing targeted solutions by addressing the identified root causes. The issue tree and the fishbone diagram are both useful tools for problem-solving and analysis. However, the advantages of an issue tree over a fishbone diagram lie in its structured and hierarchical approach.

An issue tree breaks down complex problems into smaller, manageable components, allowing for a more systematic and focused analysis. It facilitates clear identification of the root cause and its associated sub-causes, enabling effective problem-solving and decision-making. The issue tree provides a logical flow and visual representation of the cause-and-effect relationships, making it easier to identify patterns, prioritize actions, and communicate findings. Its flexibility and scalability make it suitable for tackling complex issues in various fields, including business, project management, and problem-solving scenarios.

There are also a variety of other frameworks used for problem solving. Some of them include:

Five Whys: This is a simple but effective framework for getting to the root cause of a problem. You simply ask "Why?" five times in a row to drill down to the underlying issue.

DMAIC: This is a more structured framework for problem solving. It stands for Define, Measure, Analyze, Improve, and Control. Each step helps you to understand the problem, collect data, identify the root cause, implement a solution, and monitor the results.

PDCA Cycle: The PDCA cycle is a four-step process for continuous improvement. By Planning, Doing, Checking, and Acting, you can identify problems, implement solutions, and measure results. The cycle is iterative, so you can repeat it as needed to achieve your goals.

Effective problem solving is a vital skill for individuals in various domains. By adopting structured problem-solving frameworks such as the PDCA cycle, Fishbone diagram, and issue tree, individuals can approach problems in a systematic manner, analyze root causes, and develop targeted solutions. These frameworks enable a comprehensive understanding of the problem, aid in organizing thoughts, and guide individuals towards effective problem.