Root Cause Analysis

Tracing a Problem to Its Origins

In medicine, it's easy to understand the difference between treating the symptoms and curing the condition. A broken wrist, for example, really hurts! But painkillers will only take away the symptoms; you'll need a different treatment to help your bones heal properly.

But what do you do when you have a problem at work? Do you jump straight in

deeper problem that needs your attention? If you only fix the symptoms – what you see on the surface – the problem will almost certainly return, and need fixing over and over again.

However, if you look deeper to figure out what's causing the problem, you can fix the underlying systems and processes so that it goes away for good.

What Is Root Cause Analysis?

Root Cause Analysis (RCA) is a popular and often-used technique that helps people answer the question of why the problem occurred in the first place. It seeks to identify the origin of a problem using a specific set of steps, with associated tools, to find the primary cause of the problem, so that you can:

1. Determine what happened.
2. Determine why it happened.
3. Figure out what to do to reduce the likelihood that it will happen again.

RCA assumes that systems and events are interrelated. An action in one area triggers an action in another, and another, and so on. By tracing back these

actions, you can discover where the problem started and how it grew into the symptom you're now facing.

You'll usually find three basic types of cause:

1. **Physical causes** – Tangible, material items failed in some way (for example, a car's brakes stopped working).
2. **Human causes** – People did something wrong, or did not do something that was needed. Human causes typically lead to physical causes (for example, no one filled the brake fluid, which led to the brakes failing).
3. **Organizational causes** – A system, process, or policy that people use to make decisions or do their work is faulty (for example, no one person was responsible for vehicle maintenance, and everyone assumed someone else had filled the brake fluid).

RCA looks at all three types of causes. It involves investigating the patterns of negative effects, finding hidden flaws in the system, and discovering specific actions that contributed to the problem. This often means that RCA reveals more than one root cause.

Tip:

You can apply RCA to almost any situation. Determining how far to go in your investigation requires good judgment and common sense. Theoretically, you could continue to trace the root causes back to the Stone Age, but the effort would serve no useful purpose. Be careful to understand when you've found a significant cause that can, in fact, be changed.

The Root Cause Analysis Process

RCA has five identifiable steps.

Step One: Define the Problem

- What do you see happening?
- What are the specific symptoms?

Step Two: Collect Data

- What proof do you have that the problem exists?
- How long has the problem existed?
- What is the impact of the problem?

You need to analyze a situation fully before you can move on to look at factors that contributed to the problem. To maximize the effectiveness of your RCA, get together everyone – experts and front line staff – who understands the situation. People who are most familiar with the problem can help lead you to a better understanding of the issues.

A helpful tool at this stage is CATWOE. With this process, you look at the same situation from different perspectives: the Customers, the people (Actors) who implement the solutions, the Transformation process that's affected, the World view, the process Owner, and Environmental constraints.

Step Three: Identify Possible Causal Factors

- What sequence of events leads to the problem?
- What conditions allow the problem to occur?
- What other problems surround the occurrence of the central problem?

During this stage, identify as many causal factors as possible. Too often, people identify one or two factors and then stop, but that's not sufficient. With RCA, you don't want to simply treat the most obvious causes – you want to dig deeper.

Use these tools to help identify causal factors:

- Appreciation – Use the facts and ask "So what?" to determine all the possible consequences of a fact.
- 5 Whys – Ask "Why?" until you get to the root of the problem.
- Drill Down – Break down a problem into small, detailed parts to better understand the big picture.
- Cause and Effect Diagrams – Create a chart of all of the possible causal factors, to see where the trouble may have begun.

Step Four: Identify the Root Cause(s)

- Why does the causal factor exist?
- What is the real reason the problem occurred?

Use the same tools you used to identify the causal factors (in Step Three) to look at the roots of each factor. These tools are designed to encourage you to dig deeper at each level of cause and effect.

Step Five: Recommend and Implement Solutions

- What can you do to prevent the problem from happening again?
- How will the solution be implemented?
- Who will be responsible for it?
- What are the risks of implementing the solution?

Analyze your cause-and-effect process, and identify the changes needed for various systems. It's also important that you plan ahead to predict the effects of your solution. This way, you can spot potential failures before they happen.

One way of doing this is to use Failure Mode and Effects Analysis (FMEA). This tool builds on the idea of risk analysis to identify points where a solution could fail. FMEA is also a great system to implement across your organization;

the more systems and processes that use FMEA at the start, the less likely you are to have problems that need RCA in the future.

Impact Analysis is another useful tool here. This helps you explore possible positive and negative consequences of a change on different parts of a system or organization.

Another great strategy to adopt is Kaizen, or continuous improvement. This is the idea that continual small changes create better systems overall. Kaizen also emphasizes that the people closest to a process should identify places for improvement. Again, with Kaizen alive and well in your company, the root causes of problems can be identified and resolved quickly and effectively.

Key Points:

- Root Cause Analysis is a useful process for understanding and solving a problem.
- Figure out what negative events are occurring. Then, look at the complex systems around those problems, and identify key points of failure. Finally, determine solutions to address those key points, or root causes.
- You can use many tools to support your RCA process. Cause and Effect Diagrams and 5 Whys are integral to the process itself, while FMEA and Kaizen help minimize the need for RCA in the future.
- As an analytical tool, RCA is an essential way to perform a comprehensive, system-wide review of significant problems as well as the events and factors leading to them.

In science and engineering, root cause analysis is a method of problem solving used for identifying the root causes of faults or problems. By definition, root cause analysis is the process of finding the underlying cause for an effect we observe or experience.

Source: https://www.mindtools.com/