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Using Structured Processes to Resolve Quality Problems

In today's competitive market, companies are often expected to provide the highest quality at the lowest cost with the quickest delivery time. This is very difficult to achieve, but concentrating on quality can be the first step on the way to gaining a competitive edge. Many companies waste a lot of time, effort, and resources trying to resolve quality problems that disrupt the organization's performance.

So, how should a quality problem be resolved?

You might think that your current problem-solving strategy is working just fine. However, if you have been using an unstructured methodology to solve problems, there may be a better solution.

Why Use a Structured Approach?

Ad hoc problem solving methods do not always lead to accurate solutions that address the root cause of the problem. The purpose of problem solving is not only to eliminate the problem, but also to prevent it from recurring. To accomplish this, it is necessary to use a structured methodology for problem solving. There are a number of reasons.

- A precise solution to any quality problem cannot be developed until the problem is correctly defined. A structured approach can lead to a complete understanding of the problem and its variables, which will eventually lead to a solution.
- Discovering the root cause of a problem can often be the most difficult part of solving quality problems. The employee may avoid identifying a root cause, or he or she may truly be unable to identify it. In the structured problem solving method, however, a root cause should be identified and accepted.
- Every team member should understand each step in the problem solving process. This helps to ensure that everyone contributes, leading to a more team-oriented style of problem solving.
- A structured approach helps the team narrow down the many available tools to find the best one for the specific need. A structured approach also helps determine *when* and *how* to use the proper tools. Some of the possible tools include:
 1. **Pareto charts.** These are useful in picking out the most vital options from many useful suggestions. Every company faces a never-ending stream of problems. Therefore, the problems need to be prioritized and solved accordingly. A Pareto chart is the best tool to identify which underlying problems are causing the most errors, so that you can focus on those first.
 2. **Brainstorming.** This allows for the collection of various ideas that are later screened to help select the best one. No judgment should be passed while the ideas are being voiced. The most appropriate one can be chosen later, after reviewing all of the suggestions.

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3. **Root cause analysis.** This is a process of asking a series of “why” questions to continue to look for the cause of the quality problem. When you are no longer able to answer a “why” question, you may be at the root cause.
4. **Other tools include:** check sheets, histograms, cause and effect diagrams, run charts, flow charts and control charts.

There are many structured problem-solving methods. A typical process is as follows:

Step 1: Identify and Prioritize the Problem

Most methods neglect this important step. Generally, it is assumed that every participant knows which problem should be given highest priority. This is not always the case. Many companies are faced with a never-ending number of quality problems but only limited resources to solve them. If the company prioritizes the problems according to their impact and urgency, resources can be allotted accordingly.

Step 2: Define the Problem Clearly

This can easily be accomplished by considering questions such as *How does the problem occur? Where does the problem occur? When does the problem occur?* Having a clearly defined problem helps in identifying its root cause.

Step 3: Identify the Root Cause(s)

This is the most important step in the entire process of solving a problem. A problem can only be solved permanently if the root cause is correctly identified. After the problem is defined in step 2, you can start to ask a series of “why” questions to determine the root cause(s). You can ask “why does the problem occur?” Then ask “why is that”, and “why does that happen”. When you cannot get further in the “why” questions, you have identified a root cause. There may be a number of causes to the problem. You should try to identify them all, and then use other techniques to prioritize the ones to resolve first.

Step 4: Brainstorm Possible Solutions and Select the Best One

This step is most effective when performed by a team because teams are able to generate more potential solutions than one person alone. The solution that is selected should be approved by the group. Again, there may be more than one solution. In that case you should determine which solution(s) are most practical and will result in the most quality problems caught.

For example, consider a machinery problem in a manufacturing plant. A maintenance man detects the defect, which he can fix to get the machine running again. An engineer, on the other hand, cites a change in the machine design as the solution to the same problem. Similarly, a production supervisor might suggest a change in the machine operating procedure, while an operations manager might believe that outsourcing the job to an external vendor is the best option. While all of these responses are valid, the team has to validate, compare, and evaluate every available option before allocating company resources to a plan.

Step 5: Plan and Execute



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The planning and execution stages of the solution will largely determine its overall success. You must successfully execute on the highest priority solutions. You should communicate the solution to all key personnel to ensure that it is implemented correctly. If the solution affects a customer, it is important that the customer is also satisfied with the plan and approves the changes made by the company.

Step 6: Verify Effectiveness

The team should measure the processes to ensure that the execution of the solution is effective. Simple measures can be captured by the team. However, if the process is sensitive or political, you might seek an outside entity to check on the implementation of the solution. This is a way to avoid a bias. Auditing, interviewing, documentation, control charts, and process capability are good ways to make sure the solution resolves the problem.

Step 7: Communicate and Congratulate

It is important to let employees know how problems are being addressed and solved and to acknowledge people who are demonstrating especially effective problem-solving techniques. This boosts confidence among the employees while at the same time motivating them to continue to use the proper problem solving techniques.

Additional Problem Solving Fundamentals

Everyone in the organization should be trained in a problem-solving methodology and all employees should be committed to using this methodology. After continued use, it will become part of the normal routine for dealing with problems. When preparing a problem-solving methodology, it is important to keep in mind a few guidelines.

- **Designate a leader.** Even if a company uses teams to solve problems, appointing a leader is essential. The leader must be able to guide the group and lead it through the problem solving process.
- **Involve employees familiar with the problem.** Only employees familiar with the problem need to be included on the team. No matter what their position in the company, they can contribute to the problem-solving process. For example, the team could be comprised of software professionals, machine operators, forklift operators, and maintenance staff.
- **Apply project management techniques, when necessary.** Project management is a fundamental discipline used to assign responsibilities, timeframes, milestones, and reviews, and then guide the problem solving process to completion.
- **Root out the root cause:** The most important step in every quality problem-solving model is identifying the root cause(s). This is not as simple as it may seem. It can require a lot of investigation and analysis.

The most difficult part of this step is differentiating the root cause from the symptoms. Participants must be trained to distinguish symptoms from root causes before they start



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trying to solve the problem. The team should take full responsibility in identifying the root cause(s).

Whenever there is a quality problem, all appropriate employees must be informed. If they are able to reduce or even fix the problem, they should be congratulated and acknowledged. Your organization should also promote the successes. When other employees hear of these successes, they will have a stronger desire to participate in problem solving teams as well.