



TenStep Supplemental Paper

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Solving Quality Problems

Today's competitive market demands higher quality and faster deliveries at lower costs. This is an uphill task for many companies. Many companies lose a lot of time, effort and resources trying to resolve quality problems that disrupt the organization's performance. Therefore how does one resolve a problem, or, more specifically, a problem in the area of quality?

The answer to this question could be, "the same way, we have been solving problems in the past!" However, the unstructured methodology of solving quality problems may not be correct.

Use a Structured Approach

Ad hoc methods cannot always lead us to accurate solutions. A structured and well laid out methodology for problem solving thus becomes imperative. This is essential because the purpose of quality problem solving is not only to eliminate the problem but also to prevent it from reoccurring.

- A precise solution to any quality problem is developed only when the problem is properly defined. Only a structured approach can lead us to a better understanding of the problem and its variables and eventually to a precise solution.
- The main hurdle in solving a quality problem is the inability or reluctance to identify the root cause. However, in the structured problem solving method, the root cause is correctly identified and is accepted.
- Each and every step is properly understood and accepted by the entire team, so everyone contributes to the problem solving.
- A structured approach guides us to choose the best analytical tool from a large number of available tools. It also provides information regarding when and how to use the proper tools.

There are many structured problem solving methods varying in complexity from four to eight steps. A typical seven step method is as follows:

1. **Prioritize and pinpoint the problem.** Most methods neglect this step. Generally it is assumed that all the participants know which problem should be given highest priority. This is not always the case. Many companies are faced with innumerable quality problems but only limited resources to solve them. If the company prioritizes the problems depending on their impact and urgency, resources can be allotted appropriately.
2. **Define the problem clearly using simple terms.** This can easily be done by answering questions like, How does the problem occur? What is the problem? Where does the problem occur? and Why does the problem occur? The proper definition of problem helps to identify the root cause.



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3. **Identify the root cause.** 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 identified correctly.
4. **Determine possible solutions and select the best.** This step is best executed in a team setting. A team-based approach provides a greater possibility to generate more potential solutions. The selected solution should then be approved by group consensus. Take, for example, 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 a solution to the same problem. Similarly, a production supervisor would suggest a change in the machine operating procedure, while an operations manager might consider outsourcing the job to an external vendor as the best option. While all of these responses are valid, only one is chosen to suit the existing circumstances. The company's team has to validate, compare and evaluate all the available options before allocating company resources for remedial action.
5. **Plan and execute.** The success of any solution is determined to a large extent by proper planning and implementation. Selling the solution comprises two phases:
 - Convincing all the key personnel involved in the problem that it is the best solution.
 - A stepwise project planning involving all key personnel to ensure that the selected solution is implemented appropriately. However, in case of a quality problem related to customer, it is important that the customer is satisfied with the changes made by the company.
6. **Verify effectiveness.** Only an effective process of quality problem solving can satisfy the customer. Hence, it becomes necessary to verify the implementation process by independent personnel from outside the problem solving team to avoid a bias. Appropriate tools for this process include auditing, interviewing, documentation, control charts, and process capability.
7. **Communicate and congratulate.** Employees should be given information regarding how problems are addressed and solved. This creates a feeling of security and confidence among the employees and in turn leads to proper problem solving techniques. Employees responsible for effective problem solving should be acknowledged.

Designate a Project Leader

Even if a company follows the team approach, appointing an owner is essential. Owners or leaders of projects can make remarkable things happen. He or she should be ready to bear the overall responsibility of the task. The company should let him/her know that his/her decision reflects positively on his/her ability as a leader.

Involve Employees Familiar with the Problem

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Only those employees familiar with the problem need to be included on the team. They could be software professionals, machine operators, forklift operators or maintenance staff. Irrespective of their position in the company, they can contribute to the problem solving process. Also, it should be made known to them that they have been selected because of their technical skills or their experience.

Apply Project Management Techniques

Project management is a fundamental concept whose function is to assign responsibilities, timeframes, milestones, and reviews and guide them to completion. These can be well represented by a properly designed corrective and preventive action system. A simple and user-friendly project management tool is ideal for solving problems.

The main step in every quality problem solving model is identifying the root cause. This is not simple. It requires investigation and a lot of intelligence. Some helpful techniques are:

- Asking ‘why’ until you arrive at the right answer.
- Testing your hypotheses again and again.
- Questioning yourself.

The main hurdle in this step is mistaking a symptom for the root cause. Participants must therefore be trained to distinguish symptoms from root causes before they start solving the problem. The entire responsibility of tracking the root cause lies with the project manager.

The following are the some of the supposed root causes.

- **Employee error may lead to quality problem.** Most likely this is not the root cause. Hence, any action taken to correct this cannot lead to a permanent solution to the problem.
- **Failure to follow a procedure.** The questions which come to our mind in this case are why an employee did not follow the procedure, whether the employee knew about the existing procedure, whether there is any reason for not following the procedure, and if it would be wrong to instantly reprimand the employees. One needs to understand why a procedure was not followed.
- **Improper / insufficient training of the employee.** ‘Appropriate’ training is the solution. However, training alone cannot rectify defective systems.

After the root cause is identified, think over the reasons for selecting the root cause. This will eliminate any errors in identification.

Whenever there is a quality problem, employees must be informed of it. If they are able to reduce or rectify problems, appreciate their effort. Also, talk of organization success in solving the problems. When employees hear more about success, their desire to participate in problem solving increases.



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A few appropriate tools that solve quality problems include:

- 1) **Pareto charts.** These are useful in picking out the few vital options from many useful ones. Every company is challenged with innumerable problems. The problems need to be prioritized and solved accordingly. The Pareto chart is the best tool. Pareto charts are also useful in selecting a single solution from various solutions to a problem.
- 2) **Brainstorming.** This evokes ideas in a group. Brainstorming collects various ideas that are later screened to select the best one. No judgment should be passed during the idea collection. The appropriate one can be chosen during review.
- 4) **Other tools** include:
 - Check sheets
 - Histograms
 - Cause and effect diagrams
 - Run charts
 - Flow charts
 - Pie charts
 - Control chart

Summary

Solving problems, whether in quality or elsewhere in any organization, depends on repeated use of a structured problem solving methodology. Using team-based efforts along with key vital tools help solve problems quicker and more effectively.