



TenStep Supplemental Paper

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A New Look at Quality from a “People” Perspective

Today’s tough and competitive economy necessitates improved quality, increased productivity, reduced production costs, minimal inventory and reduced time to market. If achieved successfully, all these will substantially increase customer satisfaction and lead a manufacturer to a greater market share. As competition and customer expectations soar, manufacturers are faced with the challenge of simultaneously addressing the cost and quality of products.

In practice, quality is defined as conformance to standards. However, meeting specifications does not always assure high quality at low costs. Quality involves much more than conformance to standards; it involves aiming for a target. Quality is variability from the target, while loss is directly linked to the extent of variability. By reducing variability, the level of quality increases and the cost (loss) decreases. The sources that cause variability in a product or service include product design, process design, incoming materials, measurement methods, manufacturing facilities and employee skills.

The manufacturing industry is now baffled by the numerous quality techniques, approaches and tools that are evolving. Success in any particular situation depends on selecting the most appropriate quality technique. Using the right concept and the right methodology the first time accelerates the improvement process.

Organizations should control the variations from set targets that arise from the “people-dominant” areas in any organization. A people-dominant area is one where a significant part of the output depends on the employees (referred to here as “people”). People-dominant areas are plentiful in any industry and are especially important in non-manufacturing.

Eliminating People-Controllable Errors

The contribution of employees towards achieving quality in any organization is significant. Quality control is vital in manufacturing a product, but it is more crucial in the service departments. To eliminate controllable faults, a four-step approach is recommended. The four steps are:

1. Prepare people to accept the challenge of improving quality
2. Create an environment conducive for improvement
3. Practice prevention instead of the conventional “find and fix” approach
4. Motivate people by giving rewards and recognition

Prepare People to Accept the Challenge

Any organization that wants to achieve excellent quality should first bring about a change in the culture and attitudes of its people. This can be done by:

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- **Eliminating system (environmental) faults.** System (environmental) faults originate from management practices and therefore management should eliminate them before approaching people about improving the quality of their work. Achieving a fault-free system takes many years. Nevertheless, management's sincere efforts to reduce faults in the system will help to create an environment conducive to quality improvement activities.
- **Creating a change in mindset.** Misconceptions are the biggest barrier to achieving excellent quality. The definition of quality itself is a widely prevalent misconception. Quality is generally defined as conformance to standards. The vital fact overlooked here is that mere conformance to standards leads to mediocre quality, not excellent quality. To achieve excellent quality, the targets should be met. When quality is expressed in terms of errors and defects, both the specifications and the targets are zero. However, when it is expressed in terms of conformance to standards, the target may be any value within the specification. A simple way to illustrate this is the case of a student appearing for any examination. The target for the student is to score 100 percent, but the specification for passing is 70 percent. Scoring 85 means that the student passed, but does not strictly imply excellence when compared to the target of 100 percent.
- **Improving skills and knowledge.** Besides a change in attitude, knowledge and appropriate skills in various fields are necessary for achieving excellence. Training helps people to acquire better skills for practicing quality control. It is a crucial step in preparing people to work for higher levels of quality. Training should include the following:
 - Concepts of quality, quality control, the significance of improvement and Total Quality Management (TQM)
 - The concepts of target, database management, the poka-yoke system (poka-yokes are mechanisms used to mistake-proof an entire process) and the principle of self-control
 - Tools and techniques for problem-solving
 - Imparting special skills wherever necessary
 - Elimination of misconceptions and wrong directions, if any

All these form the first step towards minimizing people-controllable faults.

Creating an Environment Conducive for Improvement

Work environment plays a crucial role in shaping minds while implementing any new improvement initiative. An ideal environment is one where all the people in the organization develop concern for quality and costs and work towards improving the quality of their work. They also encourage and aid the improvement of others in the organization. Management should be committed to supporting people at all levels and

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should eliminate system faults before approaching them. A simple case to illustrate this follows:

When a government-owned factory based in the US decided to introduce quality circle initiatives, its Chief Executive was apprehensive regarding its success. He observed that the environment in his company was a hostile one where people were blaming each other for the poor quality of products. This environment was not conducive to initiating operator involvement in quality improvement activities. People were not confident that the upper management was committed to improvements. To create an appropriate environment, the following steps were taken:

- Senior managers were trained in quality and problem-solving techniques
- Top management identified more than 100 problem areas for improvement
- Task forces with senior managers as team members and leaders were formed to prioritize and initiate improvement activities
- The Chief Executive regularly reviewed the progress of the work

The CEO was surprised when, within six months of initiating the quality circles, many long-standing problems were attended to and solved by the senior management group. People's apprehension about the management's commitment disappeared and the quality circles functioned smoothly. Employees voluntarily joined the group and solved even the most complex problems.

Practice Prevention Instead of a Find and Fix Approach

Conventional inspection practices detect defects after the damages have occurred. This not only adds to costs, but also reduces quality. To overcome this, a prevention approach has to be adopted, where defects and mistakes are prevented from occurring at the source itself. Two vital concepts that help prevention of defects and mistakes are:

- **Self-control.** This is a very powerful concept that emphasizes the concept of the operator of a process controlling quality, rather than the conventional practice of controlling the operator for quality. This helps to infuse quality right at the source. Self-control can be achieved only if a person has a thorough knowledge of the specifications, receives feedback and also has the authority and resources for applying corrections to the process whenever things go out of specification. Inspectors should ensure that every product passed on to the next process is defect-free.
- **Poka-yoke.** Also known as mistake-proofing, this idea accounts for the fact that mistakes are common when people perform monotonous jobs. Although people's awareness on quality and attention to their work reduces mistakes to a large extent, employees cannot completely avoid mistakes. Luckily, mistakes will not turn into defects if they are discovered and eliminated at source.

Poka-yokes are mechanisms used to mistake-proof an entire process. Ideally, poka-yokes ensure that proper conditions exist before actually executing a process step, preventing defects from occurring in the first place. When this is not possible, poka-



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yokes perform a detective function, eliminating defects as early as possible. These mechanisms can be electrical, mechanical, procedural, visual, human, etc. that prevent incorrect execution of a process step.

Poka yoke emphasizes the need to shift from informative inspections to source inspections in order to completely eliminate defects. There are two types of poka yoke systems: control systems and warning systems. In the control system, operations are halted and feedback and corrective actions are taken before resuming the operation. In the warning system, defects trigger buzzers or lights and immediate action is taken.

Rewards and Recognition

It is often observed that improvement initiatives in many organizations suffer from the lack of a reward and recognition system. Rewards and recognition are vital for motivating people to be creative at their jobs. A system should be in place to evaluate the success of any improvement initiative. Points should be awarded for all improvement projects that are successfully implemented. The accumulation of points for further rewards encourages people to continue their efforts. This also helps in creating an environment conducive to continuous improvements in the organization.