



TenStep Supplemental Paper

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The Spirit of Quality

The current global economy challenges the business world with rapid technological innovations and fierce global competition. Quality is a popular subject today, and companies are now working towards using quality as the strategic weapon to beat competitors.

From Statistical Process Control (SPC), Quality Function Deployment (QFD), Design of Experiments (DOE), 5S, Kaizen, Total Quality Management (TQM) etc., the list of methods being implemented for continuous improvement is endless. Top managers are now taking up various continuous improvement initiatives to achieve quality system certifications and awards in order to gain a competitive edge. However, it is often observed that the initial enthusiasm starts flagging with time, and the number of non-conformities rise steadily. It is therefore vital for companies to prevent burnout by laying adequate groundwork.

The 80/20 Rule

Building quality into your processes and products requires careful planning and dedicated effort. Experts say that depending upon the effort put in by companies, typical return-on-investments (ROI) for quality and continuous improvement vary from 3 to 20 fold. Considering the comparisons of failures to successes, it is seen that the 80/20 rule inevitably differentiates the vital few from the trivial many. Many successful companies were once on the verge of being knocked out by their competitors, until they took up continuous improvement efforts. What is the secret behind the success of continuous improvement in these vital few that made them world leaders?

Management Involvement is the Driving Force

A survey of Baldrige Award winners revealed that management involvement is crucial for success. Managers hold workers and manufacturing methods responsible for poor quality. They also need to realize that the decisions they make affect product quality and customer service as well.

The causes for the failure of continuous improvement are endless, but the most crucial one is a lack of management support and commitment. Other causes are briefly listed:

- Incompatible management styles such as a hierarchical and individual-based organizational structure rather than lean and team-based efforts
- Poor communication of daily organizational activities for mobilizing change and continuous improvement
- Lack of leadership at various levels
- Lack of a reward / motivation / recognition system, or one that is incompatible with continuous improvement (a classic example is that of rewarding quantity and not quality)



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- Neglect of supervisors throughout the change process and consequent resistance by them
- Lack of a strong foundation for business process improvement, process orientation and an understanding of customer needs and expectations
- Discouragement of organizational and individual learning
- Lack of standardization of best practices

Before venturing into continuous efforts, companies should first ensure that adequate resources, trainers and training methods are in place. All processes should have good plant-floor supports and follow-ups. Corrective action procedures must be well-defined, and the system of short-term solutions to problems should be eliminated.

Committing Words and Not Deeds

Studies reveal that many companies that claimed to have taken up SPC, TQM or any other continuous improvement initiatives committed themselves only on paper. They were chasing buzzwords that were in vogue and thus missed valuable opportunities to create effective models for change management and organizational learning, which are essential for adapting to changes efficiently and effectively.

Wanted: Quality Engineers

Experts say that companies that plan to return to their continuous improvement efforts with the hope of not repeating past mistakes have to first expand the roles and responsibilities of their quality engineers. Usually, companies entrust industrial engineers with the responsibilities of controlling and ensuring quality.

It is easy to say that all the employees of a company must be deeply committed to its continuous improvement process. However, it is a challenging task to define roles and responsibilities that parallel the employee's commitment and involvement. Only top management can control issues like planning, redefinition of jobs, leadership, and the rewards and recognition system. However, experts say that Quality Engineers (QEs) should be involved in many of these issues. They can help their companies to avoid the pitfalls that often result in failure of continuous improvement initiatives by:

- Establishing baseline data, goals and an efficient feedback system
- Training and developing teams
- Identifying critical processes and characteristics, pilot projects, data collection plans, and measurement systems and establishing Corrective Action Plans (CAPs)

Cost of Poor Quality

The first and most challenging issue is that of establishing baseline data, goals and a feedback system. It basically consists of a start, finish and feedback mechanism that enables the company to determine if it is making progress and if adjustments are necessary. In the case of continuous improvement, establishing a start-finish-feedback model is challenging, and the model is referred to as a Cost-Of-Poor-Quality (COPQ)

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system. It is seen that the COPQ of many companies amounts to about 10-40% of sales. By establishing, tracking and reducing these costs, companies can derive immediate benefits, both externally in terms of increased sales, satisfied customers and enhanced reputation, and internally in terms of major cost reductions.

Experts who have worked with a number of companies (both large and small) in diverse industries repeatedly confirm that a COPQ system is a key force behind any continuous improvement initiative. With management and plant-floor personnel engrossed in activities for continuous improvement, it is ideal to entrust the Quality Engineers (QEs) and other technical personnel with the responsibility of developing an effective COPQ system.

Quality engineers can justify costs involved in continuous improvement and can quantify Return-On-Investment (ROI). COPQ systems help to identify non-value adding activities, which, in reality, add to the costs. External and internal failure, prevention and appraisal costs are four basic costs identified by a COPQ system.

- External failure costs are incurred when a defective product or service is delivered to a customer. These include warranty costs, penalties, concessions given for defects in quality, and recall costs.
- Internal failure costs occur when errors are detected and corrected before a product or service is delivered to the customer. These include rework, the associated overtime and material waste costs, and subsequent retesting costs.
- Appraisal or inspection costs are calculated by taking into account the money spent to maintain a company's quality level. For instance, testing and checking whether materials and products conform to specified quality requirements would be considered appraisal costs. The costs of laboratory testing, quality audits and testing equipment also fall in this category.
- Prevention costs consider the costs spent to prevent errors and poor quality from occurring. These include the costs of quality planning, quality training and quality improvement programs. The costs resulting from studying the needs and expectations of customers, as well as the costs of quality systems, are also regarded as prevention costs.

In addition, a COPQ system also takes into account indirect costs like customer dissatisfaction costs, customer-incurred costs, lost-opportunity costs, and loss-of-reputation costs.

Experts say that the successful implementation of a COPQ system is possible only when the company specifies the conditions that are necessary for the COPQ system to be effective. They also have to bring together cross-functional teams that include production, quality, maintenance, engineering, accounts and information systems. A Quality Engineer (QE) can be more effective in facilitating this.

A challenging task for a Quality engineer taking up continuous improvement initiatives is that of rooting out organizational culture. This is because changing a culture involves



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changing attitudes and deep-seated mindsets. The other crucial aspects are grouping together employees from different functional areas and fostering a culture of organizational and individual learning. Setting up a precise tracking system is another challenge.

The following guidelines help Quality Engineers to take up the challenge of change management and continuous improvement smoothly:

- Be people and team oriented
- Facilitate – interact closely with employees and encourage learning, self-discovery, self-creation, reflection and questioning minds. The effectiveness of a QE does not hinge on what he or she says, but on how he or she says it.
- Market and sell change and continuous improvement. To achieve the organization's needs and goals, the Quality Engineer has to address every employee's concern of "What can I do for the company's goal?" Similar to selling products and services, the Quality Engineer has to sell problems or opportunities. This helps to increase employee involvement and ownership.
- Walk the walk and talk the talk. The Quality Engineer has to ensure that all plans are being put into action, both by the management and employees.