



TenStep Supplemental Paper

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Dr. Edward Deming – The Pioneer of Quality Principles

W. Edward Deming was born in Sioux City, Iowa, in 1900. In 1927, he began attending Yale University, where he was awarded a doctorate in mathematical physics. Later, he joined the U.S. Department of Agriculture. Dr. Deming then went on to serve the United States during the Second World War.

In 1947, the American section of industrialists in Japan invited him to share his views on quality. His ideologies and thoughts became so popular in Japan that he was asked to return for more lectures. In 1960, the Japanese emperor awarded him the prestigious Second Order Medal of the Sacred Treasure.

Nevertheless, it was only in the 1980s that Deming's theories gained popularity in the West. It was an NBC television documentary titled "If Japan Can, Why Can't We?" that popularized his theory. Seven years later, his book "Out of the Crisis" won the National Medal of Technology in America.

What is so special about Deming's Theory?

Deming stressed the need to view variability as a critical factor influencing quality. He believed that in order to reduce variability, one should be able to distinguish between special causes/assignable causes and common causes.

Special causes are causes that hinder the consistent performance of a process/product/service. According to Deming, the local day-to-day workforce can detect and eliminate special causes.

For instance, consider this: A process is conducted both during the day and the night. Consequently, it involves operator shifts. The same person/employee is not entirely involved with the process. Hence, the process might vary during operator switches.

Special causes bring in large variations and must be eliminated or rectified. A few examples of special/assignable causes are:

- Operator switched during shifts
- Poor knowledge of the equipment settings
- Operator ignorance
- Improper equipment handling
- Computer malfunction
- A substandard batch of raw material
- Power surges

Common causes, on the other hand, are intrinsic to the process in consideration. According to Deming, a single common cause might not account for a large variation, but many put together can cause significant variations in the process. The

TenStep Supplemental Paper

management/authority must thus ensure that common causes are eliminated. In short, it is only with the help of management that common causes can be reduced.

Some common causes include:

- Faulty operating guidelines
- Poor design
- Poor equipment maintenance
- Substandard working conditions, e.g. too much lighting or noise, an extremely dirty factory floor, high temperatures and poor ventilation
- Machines not ideal for the job on hand
- Raw materials of poor quality
- Lack of training leading to non-conformities
- Equipment wear and tear

According to Deming, though organizations could detect these variations, they couldn't eliminate them because most managers could not differentiate between a special cause and a common cause. Further, he believed that 94% of improvements could be achieved only if management is involved.

Deming's lectures in Japan stressed more than statistics. He proposed a methodology called the PDCA (Plan, Do, Check, Act), or the Deming cycle, that would help in problem-solving and defect elimination. He also stressed top management involvement in enhancing quality standards.

Deming's journey to the West

After what Deming's lectures did for the Japanese industrial community, the West realized the potential of his ideologies. Later, Deming became actively involved in enhancing quality management in Western industries.

Deming believed that if organizations desire to improve their management strategy, they must ensure that they produce a minimal amount of wasted manpower, resources and overhead. Unless this is achieved, customer costs will increase. Often, organizations believe/assume that everything is under control and not much improvement is possible. However, Dr. Deming asserts that for functional excellence, organizations must minimize non-conformance and defects by delegating the right person for every job.

Computer and automated assembly lines – Not everything

According to Deming, computers and robots help iron out many problems. However, they cannot avert a disaster if the management is flawed. He also believed that learning the latest statistical control techniques and teaching them to the production workforce is not sufficient. Such actions might help to put off a disaster for a time, but they cannot completely prevent their occurrences.

TenStep Supplemental Paper

According to Deming, organizations can create a perfect working environment only through genuine and established business ethics. To achieve this objective, he formulated 14 points.

Deming's' 14 points

1. Create constancy of purpose toward improvement of product and service.
2. Adopt a new philosophy. We are in a new economic age. Western management must awaken to the challenge, learn their responsibilities, and take on leadership for change.
3. Cease reliance on mass inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product.
4. End the practice of awarding business on the basis of price tags. Instead, minimize total cost. Move toward a single supplier for any one item, building a long-term relationship of loyalty and trust.
5. Constantly improve the system of production and service to improve quality and productivity and thus constantly decrease costs.
6. Establish on-the-job training.
7. Institute leadership. The aim of supervisors should be to help people, machines and gadgets to do a better job.
8. Drive out fear so that everyone may work effectively for the company.
9. Break down barriers between departments. People in research, design, sales, and production must work as a team to foresee problems that may be encountered with the product or service
10. Eliminate slogans and targets for the work force that ask for zero defects and new levels of productivity. Such aims merely create adversarial relationships. These problems of poor quality and low productivity belong to the system and are beyond the power of the workforce alone.
11. Leadership should substitute for work standards (quotas) on the factory floor, management by objective, management by numbers and numerical goals.
12. Remove barriers that rob employees, management, and engineering of their right to pride of workmanship. Also, abolish annual review or merit ratings and management by objectives. The responsibility of supervisors must be changed from merely looking at numbers to looking at quality.
13. Institute vigorous education and self-improvement programs.
14. Initiate employees to shoulder the responsibility of accomplishing the transformation.

Deming's 14 points are not tools for quality management; but guidelines.

Deming believed that to compete with Japanese companies, Western companies had to undergo a radical change. His guidelines were meant to facilitate this task. However,



TenStep Supplemental Paper

according to him, certain diseases impair the incorporation of these guidelines. These include:

- Absence of a streamlined approach
- Focus only on short-term benefits
- Annual ratings and employee merit evaluations
- Focus attention on issues that are apparent, neglecting the non-apparent

Dr. Deming proposed a seven-step action plan that would foster change and eliminate these drawbacks.

Deming's seven-step action plan

1. To eliminate problems and ease the implementation of Deming's 14 points, organizations must chalk out certain plans.
2. Management must be actively involved in the change initiative.
3. Management must convince employees of the need for change.
4. The approach towards change must be divided into stages that identify potential improvements from the customer viewpoint. Each stage must be aimed at continual improvement of the process. Employees must constantly strive to achieve better quality and customer satisfaction.
5. Do not wait for an auspicious day. Embark early on the journey towards continual quality improvement the organization can believe in. The Deming (Shewhart) Cycle can assist improvement at all stages.
6. Effective change requires the organization's active participation. Hence, involve everyone in the improvement process.
7. Emphasize the development of an organization for quality.

Summary

Problems are an integral part of the improvement process because they indicate opportunities for growth. Nevertheless, an organization cannot grow by merely solving the problem. Organization-wide transformation is essential. Dr. Deming's quality management forms the base for effecting such radical transformations.