

Exploring Crosby's Fourteen Steps to Quality Improvement Applied to Industry

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Abstract: In this paper the author explains the fourteen points of Crosby's quality improvement applied to industry. Examples are given to each point such that there is a clear understanding of each point. Explanations are given in such a way that the management of the industry may directly apply the thoughts of Crosby to practice.

Keywords: Commitment, Improvement, Measurement, Quality awareness, Corrective action, Zero defects.

I. PROCEDURE

1.1 Management Commitment: Top management should commit to quality. It has the mission of changing the culture of the company. The top management is committed to the development and implementation of the quality management system and its continual improvement by

- Communicating to the employees of the importance of fulfilling customer requirements. This should be done by way of meetings, display posters and regular training programmes.
- Communicating and establishing the quality policy of the company.
- Establishing quality objectives and reviewing it periodically.
- Conducting management reviews at regular intervals, and
- Making available appropriate resources for the effective implementation of quality management system.

QUALITY POLICY: (An example)

We commit to provide our customers, external and internal, products always conforming to agreed quality and delivery requirements fulfilling their needs and aspirations.

We commit to continuous improvement of our products, processes and systems with the involvement of all employees and up-gradation of their skills.

QUALITY OBJECTIVES: (An example)

We have set for ourselves a target for achieving products of consistent high quality.

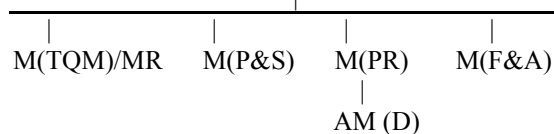
To achieve this we shall work to set standards of process parameters and time at every stage to attain annual goals.

We shall strive for doing all things right first time and every time and thus work towards a target of zero cost of quality.

1.2 Quality improvement team: The personnel of good leadership is chosen to guide, coordinate and support the quality management system. The interrelation of all the personnel who manage, perform and verify work affecting quality is shown in the following organogram. They have the organisational freedom and authority to carry out the following activities;

- Initiate action to prevent the occurrence of any non-conformance in product, process and quality system.
- Identify and record any problems relating to the product, process and quality system.
- Initiate, recommend or provide solutions through designated channels.
- Verify the implementation of solutions.
- Control further processing, delivery or installation of non-conforming product until the deficiency or unsatisfactory condition has been corrected.

ORGANOGRAM (An example)
CEO



CEO - Chief Executive Officer, M(TQM)-Manager Total Quality Management, MR - Management Representative, M(P&S) - Manager Purchase and Stores, M(PR)- Manager Production, AM(D)- Assistant Manager (Despatch), M(F&A)- Manager finance & accounts

1.3 Measurement: Use the following statistical process control tools to measure, analyse and improve upon processes

- Flow Chart
- Pareto Chart
- Check Sheet
- Cause And Effect Diagram
- Histogram

- f) Control Charts
- g) Scatter Plot

The team needs to know the use of the above seven statistical process control tools. Those who don't know should be trained by an expert trainer. The training record of them should be maintained. They should also be trained in process capability study.

1.4 The cost of quality: There are four categories of quality costs.

- a) Internal failures costs – Scrap, Rework, Redesign of hardware, Redesign of software, Downgrading,
- b) External failure costs - Warranty charges, complaint adjustments, receipt and replacement of returned materials, Allowances and concessions to customer due to substandard product,
- c) Appraisal costs - Incoming inspection and test, In-process inspection and test, Final inspection and test, Document review, Product quality audits, Calibration cost to maintain accuracy of measuring and test equipments.
- d) Prevention costs – Quality planning, process planning, process control, quality plan audits, Training,

1.5 Quality Awareness: Company-wide awareness for quality management system is needed. This can be done through circulating regular newsletter, quality policy cards, posters, etc. In many industries the quality policy is read and make people understand the meaning of it. They should understand PONC (Price of non-conformance). They should understand their internal customers and their needs and expectations.

1.6 Corrective action: The team is to lay down the method for analysing the root causes of non-conformities and to take effective remedial measures to prevent their recurrence. For example once in a fortnight a summary report based on daily laboratory test reports and any customer complaints received during the last fortnight is prepared. The summary is analysed by say M(TQM) to detect any trends of non-conformance in the product/process/system. M(TQM) brings this analysis to the attention of the concerned personnel in the area where the non-conformance have occurred. The concerned personnel investigate the causes of the non-conformities with the involvement of departmental personnel or if necessary persons from other departments and arrive at solutions to overcome the problems.

Preventive action should also be taken to remove the potential causes of non-conformities.

1.7 Zero defects (ZD) planning: The team may plan for zero defects. They should initially aim for SIX-SIGMA quality drive. For six-sigma

Defects free parts = 99.999998% (normal distribution area)

Defects = .000002% = 0.002ppm

However at present Motorola claims to have achieved 3.4 ppm defects in their SIX-SIGMA drive.

1.8 Employee education: Every employee should receive the same education on the quality system.

1.9 ZD Day: The top management should chose a day in a year when they will make its official commitment to quality in front of every employee. This publicity ensures their seriousness about quality. ZD day is important because it is deterrent to management backsliding on the quality process.

1.10 Goal setting: Department-wise goal setting is possible. Every department should prepare a time bound chart and display it in a place where everyone can see it. The chart should show a process indicator.

1.11 Error-Cause removal: The team should form a quality circle and ask the workforce to submit the problem and solution of it(if they have solved). Brainstorming session can start if there is any unsolved problem. If any solution is found , the submitting person should be informed. Check that the same problem should not occur. We can use Ishikawa diagram or Pareto chart to solve such problems.

1.12 Recognition of good work in the quality process:

- a) Recognise hard-working people who are valuable to the quality effort
- b) Ensure that those recognised are chosen by their peers
- c) Provide a clear picture of what quality work is
- d) Provide living “beacons of quality” for others to emulate on a daily basis

1.13 Quality Councils: The team of quality should meet on a regular basis to learn from each other and if required from experts from outside.

1.14 Repetition: Quality system is an ongoing process. “DO IT ALL OVER AGAIN “ is the philosophy.

Select a new team with perhaps a member from the old (experienced) team. The new team now will start working with a fresh look at the quality process.

II. CONCLUSION

In this paper the Author has tried to explain the fourteen points of quality guru CROSBY. This can readily be applied to any kind of industry.

III. SCOPE FOR FURTHER STUDY

There are many other quality gurus like JURAN, DEMINGS, TAGUCHI.

One can explore their quality points in their papers.

REFERENCES

- [1] Juran's quality planning & analysis for enterprise quality: by Gryna,Chua, Defeo
- [2] Principles of Quality Costs: by Campanella , ASQ , Milwaukee
- [3] Value-Driven Quality-QM Journal: by Evans, J.R. and M.W. Ford.
- [4] World Class Quality: by K.R.Bhote
- [5] What You Need to Know About Six Sigma: by Chua, R.C.H.
- [6] Creating Quality: by Kolarik, W.J
- [7] Root Cause Analysis-Quality Press, ASQ: by Sanders, Ross, and Coleman